ORDER NO. VSD9602M601

Service Manual

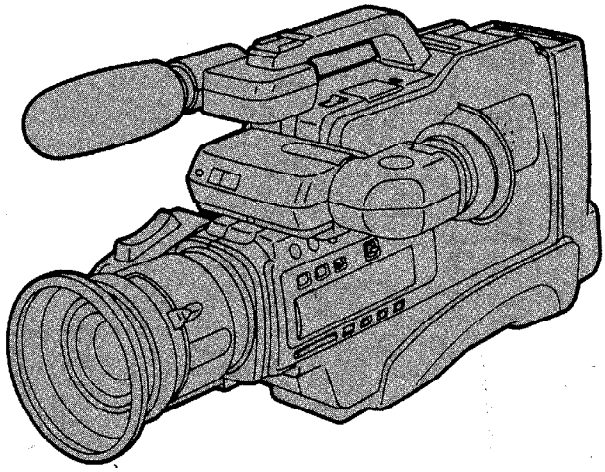
General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

Panasonic S-VHS VHS PAL 625

Hi-Fi

S-VHS Movie

AG-DP200E
AG-DP200B



AG-DP200

Please file and use this Service Manual together with the Service Manual of VW-AM10 Ⓑ
(Order No. VMD9601M107)

Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advice non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service manual by anyone else could result in serious injury or death.

Specifications

S-VHS Movie — Information for your safety.

Power Source:	DC 12.0 V		
Power Consumption:	Recording mode; 8.8 W (Battery Operation)		
Tape Format:	S-VHS/VHS		
Recording/Playback Time:	5 hours with SE300		
VIDEO			
Television System:	CCIR; 625 lines, 50 fields PAL colour signal		
Output Level:	Video out (PHONO);	1.0 Vp-p,	75 ohm terminated
	S-VIDEO OUT Terminal;	1.0 Vp-p,	75 ohm terminated
AUDIO			
Output Level/Impedance:	Audio Out (PHONO); −6 dBV 47 kohm loaded/less than 1 kohm		
Input Sensitivity/Impedance:	Mic In (M3 Stereo); 70 dBV/4.7 kohm or more unbalanced		
Audio Track:	1 track (Normal-Mono only), 2 channels (Hi-Fi Sound-Stereo)		
Image Sensor:	⅓-inch CCD Image Sensor		
Lens:	12:1 Power Zoom Lens (Optical capability) F1.6 Focal Length; 5.6–67 mm Digital AI Auto Focus/Auto Iris Filter Diameter; 49 mm		
Viewfinder:	0.7-inch Electronic Viewfinder		
Standard Illumination:	1,400 Lux		
Minimum Required Illumination:	4 Lux (Low Light Mode)		
Operating Temperature:	0°C–40°C		
Operating Humidity:	10%–80%		
Weight:	Approx. 2.8 kg (without Battery Pack)		
Dimensions:	130 (W)×245 (H)×476 (D) mm		

AC Adaptor — Information for your safety.

Power Source:	AC 100–240 V, 50–60 Hz (Automatic voltage adjustment)
Power Consumption:	44 W
DC Output:	DC 12 V 1.8 A (VHS Movie) DC 12 V 1.5 A (Battery pack charging)
Weight:	Approx. 0.62 kg
Dimensions:	80 (W)×54 (H)×196 (D) mm

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

INTRODUCTION

This Service Manual contains all the technical information which will allow service personnel to understand and service the Panasonic S-VHS Movie model AG-DP2 0 0 .
The AG-DP2 0 0 has many special feature as described later. Added to the basic S-VHS format, these features mark the AG-DP2 0 0 an ideal unit for business, education, sales and training applications.

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SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohm meter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2MΩ.
   When the exposed metal dose not have a return path to the chassis, the reading must be ∞.

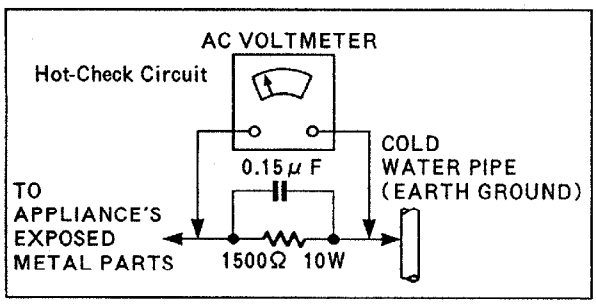

Figure 1

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet.
   Do not use an isolation transformer for this check.
2. Connect a 1.5KΩ, 10W resistor, in parallel with 0.15μF capacitor, between each exposed metallic part on the set an a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground.
   Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless mother such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

X-RADIATION

WARNING

1. The potential source of X-Radiation in EVF sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 10kV without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

3. Measure the High Voltage. The meter (electric type) reading should indicate 2.5kV, ± 0.15kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

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ATTACH CAMERA ADJUSTMENT PROCEDURE

Technical Information

Service caution

1–1. Service Extension Cables

Use the following extension cables when checking or adjusting the individual circuit boards.

	PART NBR	PART NAME	CONNECTION	Q'TY
1	VFK0667	30 PIN EXTENSION CABLE	MAIN C.B.A. B3001~PROCESS C.B.A. PP302	1
2	VFK0724	32 PIN EXTENSION CABLE	SENSOR C.B.A. B201~PROCESS C.B.A. PP301	1
3	VFK0783	12 PIN EXTENSION CABLE	CCD UNIT~SENSOR C.B.A. B202	1
4	VFK0802	24 PIN FLAT CABLE	LENS UNIT~PROCESS C.B.A. FP701	1
5	VFK0823	6 PIN FLAT CABLE	PROCESS C.B.A. FP301~CAMERA OPERATION C.B.A. FP6701	1
6		14 PIN EXTENSION CABLE	MAIN C.B.A. PS3002~TBC C.B.A. PP3501	1

How to use extension cables.

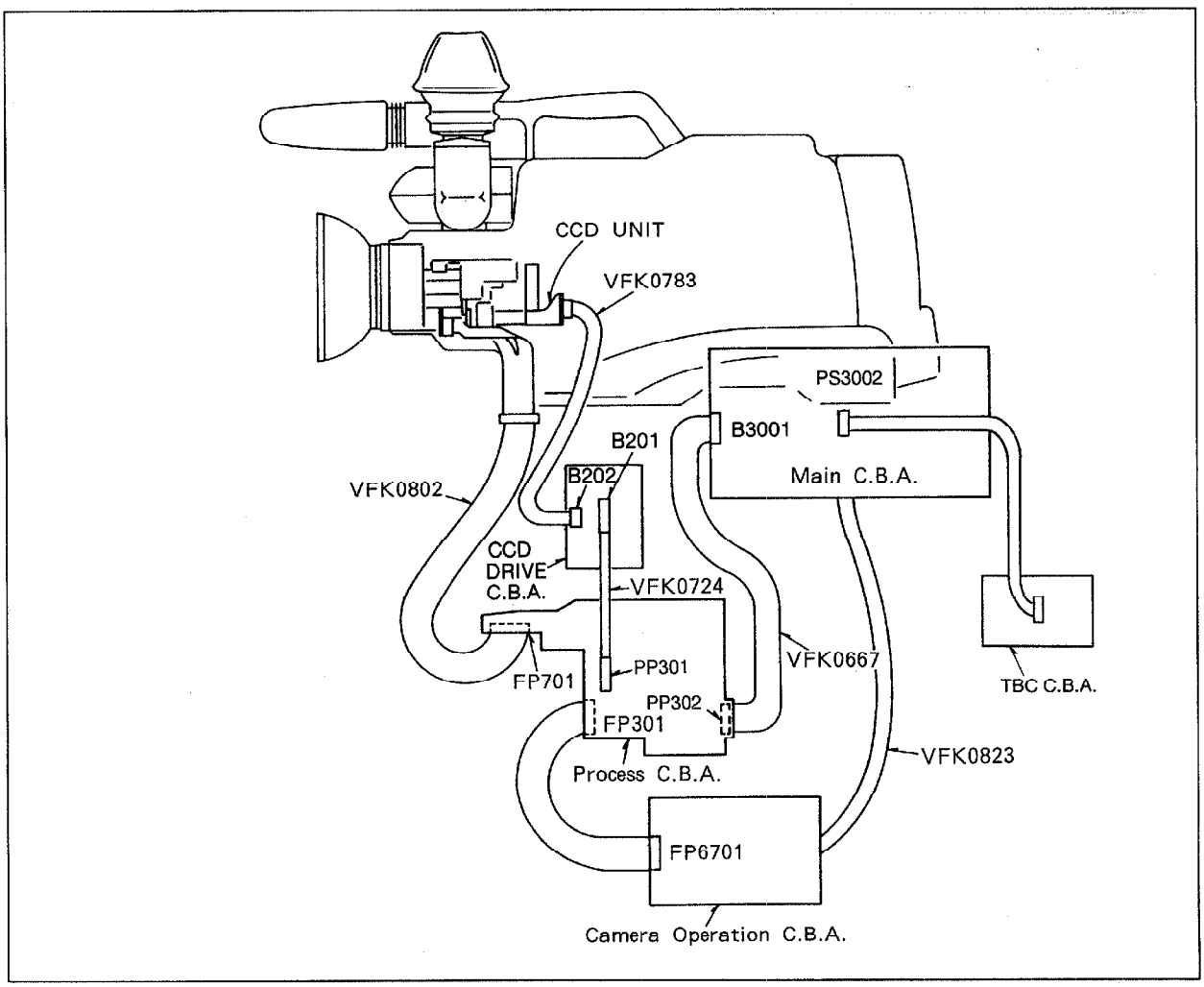
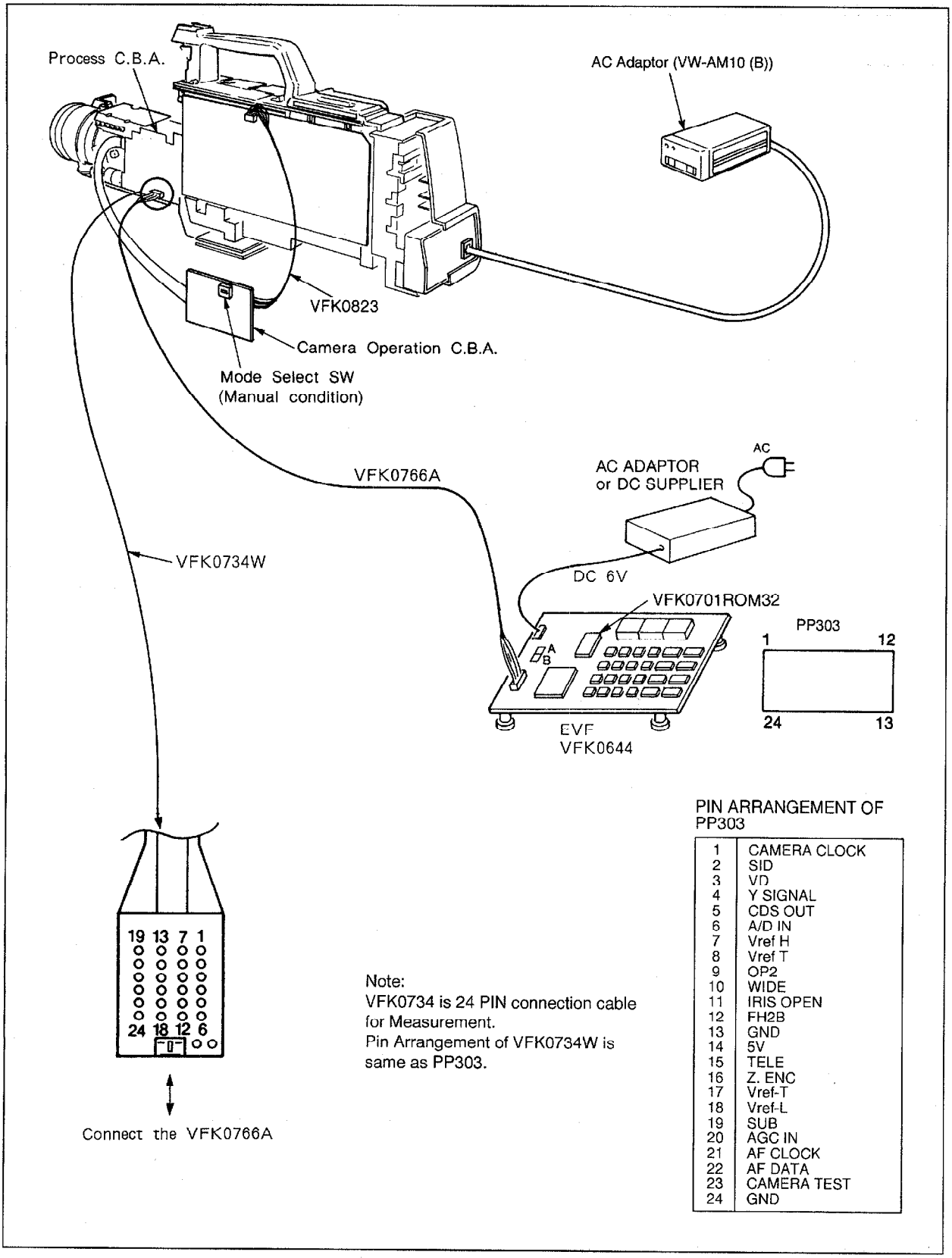


Fig. T1–(a)



Note:
VFK0734 is 24 PIN connection cable for Measurement.
Pin Arrangement of VFK0734W is same as PP303.

PIN ARRANGEMENT OF PP303

1	CAMERA CLOCK
2	SID
3	VD
4	Y SIGNAL
5	CDS OUT
6	A/D IN
7	Vref H
8	Vref T
9	OP2
10	WIDE
11	IRIS OPEN
12	FH2B
13	GND
14	5V
15	TELE
16	Z. ENC
17	Vref-T
18	Vref-L
19	SUB
20	AGC IN
21	AF CLOCK
22	AF DATA
23	CAMERA TEST
24	GND

Fig. T1–(b)

2. Self–diagnostic system and service mode

2–1. General

This Movie camera has a self–diagnostic system which faclitates quick trouble shooting.
Pressing the START/STOP Switch and Memory switch simultaneously, same time turn on the Power Switch, After that, unit into Service mode.

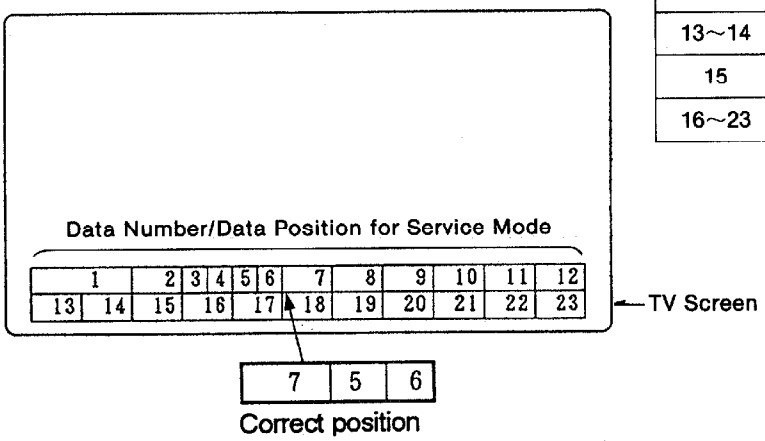
2–2. Service Mode

This Movie camera is possible to see RAM data of IC6004 on the TV screen or EVF.
How to read the RAM data is shown in Fig.T2.
All data is displayed in the Hexadecimal Number. (letters and number 0 or F)

Note:
Pressing the START/STOP Switch and Memory switch simultaneously, same time turn on the power switch.
After that this Movie camera Shows data 1 to data 23 on TV screen as shown in Fig.T2–T10.

DATA NUMBER	DATA CONTENTS
1	Data Number 1 is position that indicates Motor conditions data
2~4	Not used
5	Data Number 5 is position that indicates Mechanism positions data
6	Data Number 6 is position that indicates tape condition
7	Data Number 7 is position that indicates key operation informations
8	Data Number 8 is position that indicates I/O condition of IC6004 PIN 118~PIN 125
9	Data Number 9 is position that indicates I/O condition of IC6004 PIN 7~PIN 14
10	Data Number 10 is position that indicates I/O condition of IC6004 PIN 29~PIN 37
11~12	Data Number 11~12 are position that indicates Battery Voltage level
13~14	Not used
15	Not used
16~23	Not used

Fig.T2



2–3. Detail of Data for Service Mode

(1) Data Number 1:
If Data 1 indicate "CYL", There is possibility that cylinder Motor is locked up.

INDICATION AT POSITION 1	CONDITION OF MOTOR
TRL	REEL is locked up
UNLD	Unloading condition
LOAD	Loading condition
CYL	Cylinder Motor is locked up

Fig.T3

(2) Data Number 5:
If Data 5 indicate "01", Mechanism is Eject position.

INDICATION AT POSITION 5	MECHANISM CONDITION
1	EJECT
2	EJECT
3	STOP
4	----
5	S-LOAD
6	----
7	PRE-PAUSE
8	----
9	PAUSE
A	----
B	REVIEW
C	----
D	PLAY

Fig.T4

(3) Data Number 6:
If Data 6 indicate "A", There is possibility that sensor detect the tape end.

INDICATION AT POSITION 6	TAPE CONDITION
0	Normal condition
3	There is no video cassette inside
9	Detect the begining of Tape
A	Detect the Tape end

Fig.T5

(4) Data Number 7:
When the pushed STOP key, Data 7 indicate

INDICATION AT POSITION 7	KEY OPERATION
00	STOP
01	EJECT
02	REWIND
03	FF
04	REVIEW
05	CUE
06	PAUSE
08	REC
09	A. DUB
0A	PLAY
0C	F. ADV
54	COUNTER CLEAR
55	COUNTER MEMORY
57	OSD ON/OFF
67	DATE ON/OFF
9F	EDIT
B1	TRACKING UP
B2	TRACKING DOWN
B3	INSERT
CC	START/STOP
FF	NOP

Fig.T6

(5) Data Number 8:

INDICATION AT POSITION 8	I/O PORT CONDITION FOR I6004
80	Loading Command is output (PIN 125)
40	Unloading Command is output (PIN 124)
20	Not use
10	Audio Mute "H" is output (PIN 122)
8	Not use
4	Audio EE "H" is output (PIN 120)
2	Video EE "H" is output (PIN 119)
1	PB "L" is output (Pin 118)

Fig.T7

(6) Data Number 9

INDICATION AT POSITION 9	I/O PORT CONDITION FOR IC6004
80	SENSOR LED "L" Command is output (IC6004 PIN 14)
40	REMOCON LED "L" Command is output (IC6004 PIN 13)
20	TALLY LED "L" Command is output (IC6004 PIN 12)
10	POWER LED "L" Command is output (IC6004 PIN 11)
8	CYLINDER ON "L" Command is output (IC6004 PIN 10)
4	FULL ERASE ON Command is output (IC6004 PIN 9)
2	CAMERA P. ON Command is output (IC6004 PIN 8)
1	POWER ON Command is output (IC6004 PIN 7)

Fig.T8

(7) Data Number 10

INDICATION AT POSITION 10	I/O PORT CONDITION FOR IC6004
80	DC LIGHT ON Command is output (IC6004 PIN 37)
40	X. TAL ON Command is output (IC6004 PIN 36)
20	——
10	——
8	——
4	——
2	——
1	——

Fig.T9

(8) Data Number 11 and 12

INDICATION AT POSITION 11	INDICATION AT POSITION 12	BATTERY VOLTAGE LEVEL
00~03	10	Less than 10.5 Volt
04~0A	8	10.5~11.0 Volt
0B~0A	4	11.0~11.5 Volt
11~17	2	11.5~12.0 Volt
18~	1	More than 12.0 Volt

Fig.T10

3. HOW TO CHECK DIGITAL CIRCUIT (PROCESS)(Using Ramp Generator)

3–1. Checking Principle

The digital circuit can be checked if a ramp signal (sawtooth signal) is supplied to the input of A/D Converter (IC307–19). The output of A/D Converter is described below.
In addition to the A/D Converter (IC307) output, all digital ICs input and output signals become specified pulses, which are listed in schematic diagram.

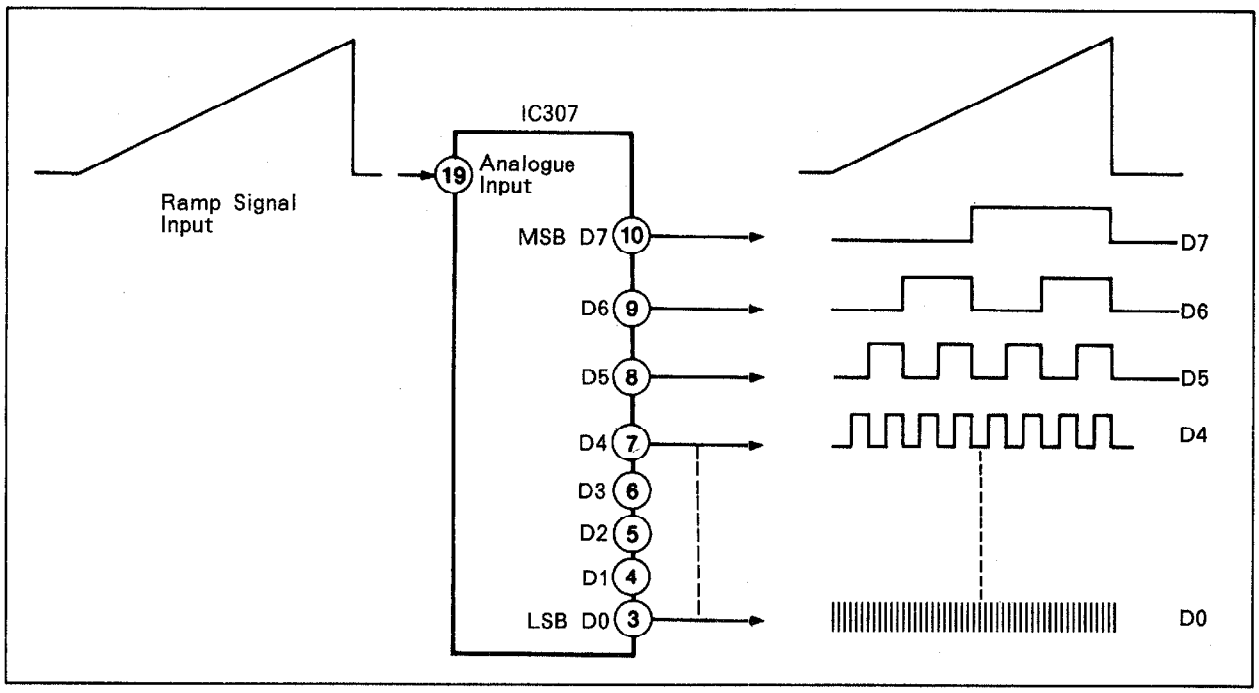
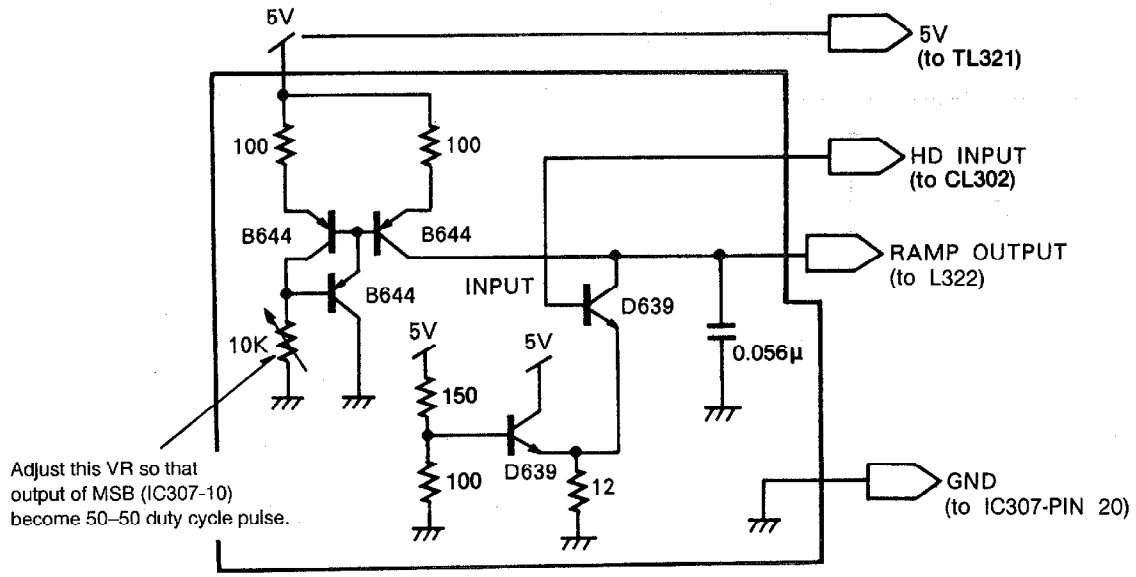


Fig.T11

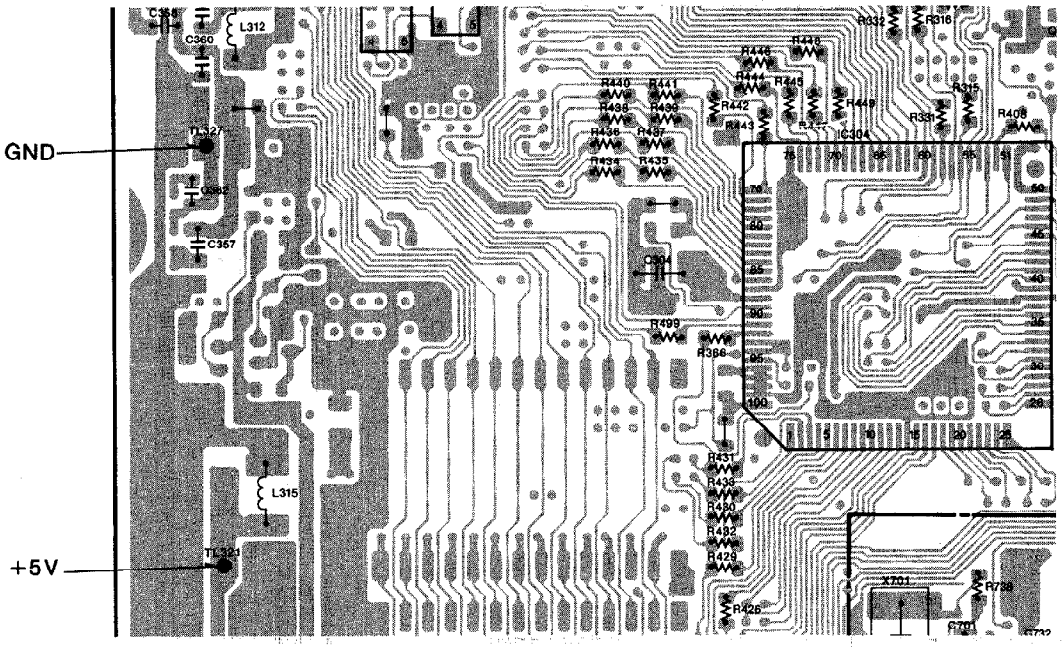
3-2. How to Connect ramp generator

In order to generate a ramp signal that synchronizes with the HD(horizontal drive) of the camera, the following ramp generator circuit has been designed.
Construct and connect it to process board as shown in Fig.T12,13.

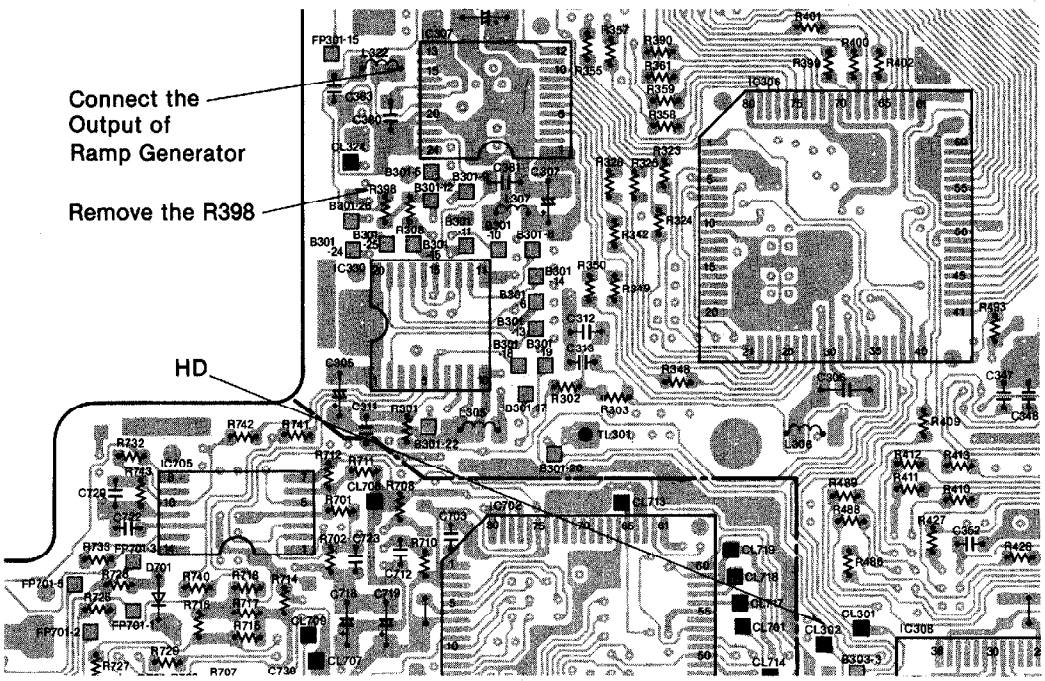


ITEMS	VALUE	PCS
RESISTOR		
ERDS2TJ120	12ohm	1
ERDS2TJ101	100ohm	3
ERDS2TJ151	150ohm	1
VARIABLE RESISTOR		
EVNDRAA00B14	10Kohm	1
TRANSISTOR		
2SB644	PNP	3
2SD639	NPN	2
CAPACITOR		
ECQB1H563JH	0.056µ	1

Fig.T12

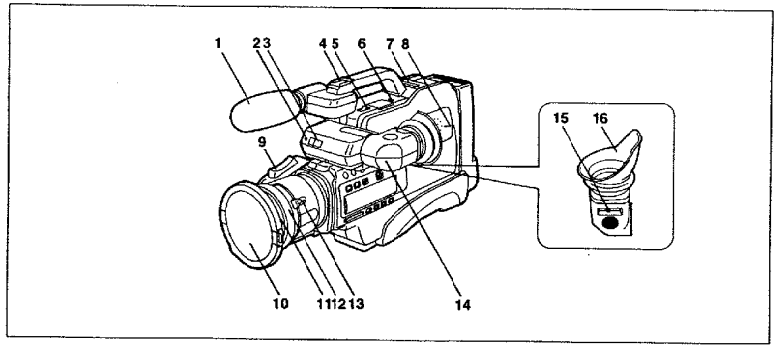


(COMPONENT SIDE)



(FOIL SIDE)

Fig.T13



Controls and Functions

1 Stereo Microphone

2 Tally Lamp
It is lit during shooting to inform the people in front of the Movie Camera that shooting is under way.

3 White Balance Sensor Window

4 Accessory Shoe
Some optional accessories (External Microphone, etc.) can be attached to this Accessory Shoe.

5 Power Switch [POWER]
For turning the Movie Camera on and off.

6 S-VHS System Selector Switch [S-VHS ON/AUTO/OFF]
The selected recording system can be selected by sliding the [S-VHS ON/AUTO/OFF] Switch to the corresponding position.

7 CAMERA/VCR Selector Cover [CAMERA/VCR]

8 Built-in Speaker

9 Zoom Buttons
Press these buttons to gradually zoom in and out.

10 Lens Cap

11 Lens Hood

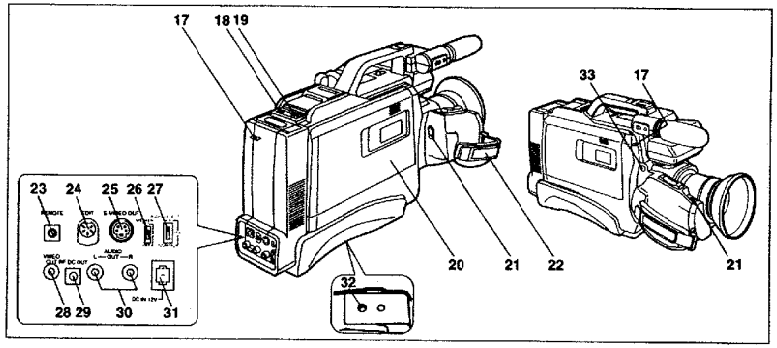
12 Focus Ring
After selecting the manual focusing mode with the [FOCUS] Button, adjust the focus to the desired subject by turning this ring.

13 Manual Zoom Lever
Turn this lever to manually zoom in or out.

14 Viewfinder
The subject in front of the camera can be seen on the viewfinder screen.

15 Eyepiece Corrector Control
To adjust the Eyepiece to your eyesight, slide this control to the left or right until the picture and indications in the Viewfinder become as clear and sharp as possible.

16 Eyecup



17 Shoulder Strap Holders

18 Tape Eject Button [TAPE EJECT]
To insert or take out a video cassette, press this button.

19 Battery Pack Eject Lever [BATT.EJECT]
Slide this lever to the right to the Battery Pack.

20 Cassette Compartment
Insert a video cassette into this compartment.

21 Start/Stop Button
Press this button to start and stop shooting a scene.

22 Grip Belt

23 Remote Control Socket [REMOTE]
Connect a Pause Remote Control (optional) to this socket.

24 Edit Socket [EDIT]
Connect an Editing Controller, etc. to this socket.

25 S-Video Output Socket [S-VIDEO OUT]

26 Speaker On/Off Switch [SPEAKER ON/OFF]

27 Audio Selector Switch [HIFI/MIX/NORMAL]

28 Video Output Socket [VIDEO OUT]

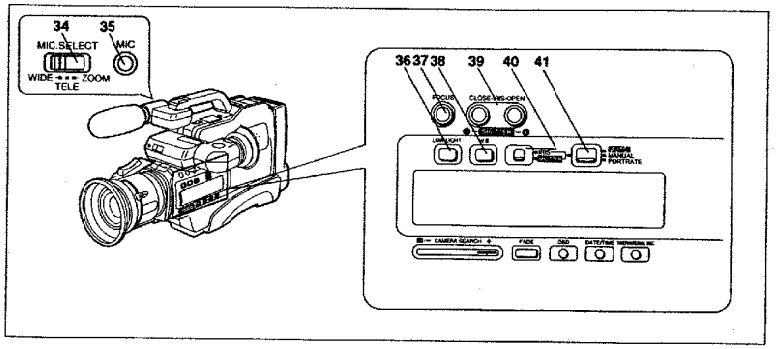
29 RF DC Output Socket [RF DC OUT]

30 Audio Output Socket [AUDIO OUT]

31 DC Input Socket [DC IN 12 V]
Connect the DC Input Cable to this socket.

32 Tripod Receptacle
When using a tripod for stable shooting, attach the screw of the tripod to this receptacle.

33 Character Generator Socket [CHAR.GEN]
Connect a Character Generator (optional).



34 Microphone Mode Selector Switch [MIC.SELECT WIDE/TELE/ZOOM]

35 External Microphone Socket [MIC]

36 Low Light Button [LOW LIGHT]
For shooting evening scenes and other scenes in low light conditions.

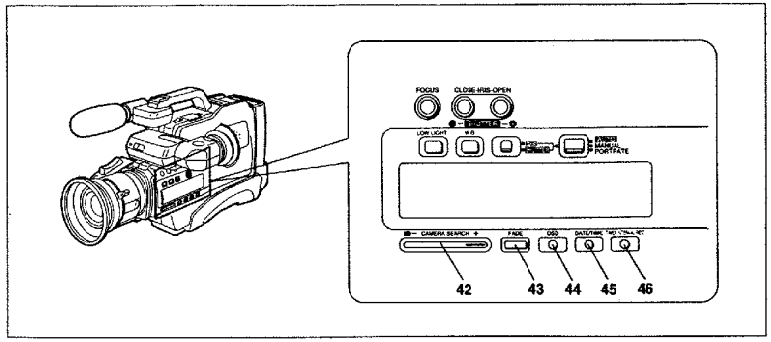
37 Focus Button [FOCUS]
Press this button to select manual focus adjustment for shooting.

38 White Balance Button [W.B]
Press this button to select manual white balance adjustment.

39 Iris Close Open/Shutter −/+ Button
The F Number and the shutter speed can be adjusted manually by pressing these buttons.

40 Selector Switch for the Iris/Shutter Speed Adjustment Function [IRIS/SHUTTER]
The Iris Adjustment Function and the High-Speed Shutter Adjustment Function can be selected with this switch.

41 Mode Selector Switch [AUTO/MANUAL/PORTRAIT]
Use this selector switch to select the automatic, manual or portrait shooting mode.



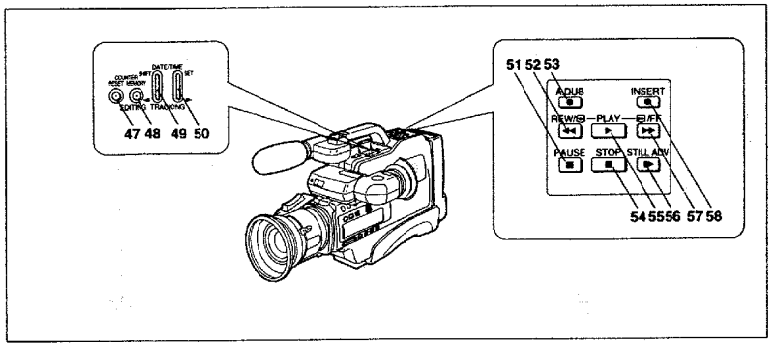
42 Camera Search Button [⊟ /– CAMERA SEARCH +]
Keep these buttons pressed to play back recorded scenes at high speed in reverse direction or at normal speed in forward direction.
To check the last few seconds of the last recorded scene, press the '–" side of the [⊟/– CAMERA SEARCH +] Button briefly.

43 Fade Button [FADE]
Press this button to fade out a scene and to fade in the following scene for a soft scene-to-scene transition.

44 On-Screen Display Button [OSD]
Press this button to make the indications in the Viewfinder disappear.

45 Date/Time Button [DATE/TIME]
Press this button to make the time and/or date appear in the Viewfinder and superimpose them onto the picture during shooting.

46 Interval Button [TIMER/INTERVAL REC]
Press this button to activate the Self-Timer and Interval Shooting Functions.



47 Reset Button [RESET]
Press this button to reset the tape counter to "0000".

48 Memory Button [MEMORY/EDITING]
Press this button to activate the Tape Counter Memory Function.

49 Tracking/Date/Time Shift Button [DATE/TIME SHIFT • ◀ TRACKING]
1) Press it to advance to the next item during the setting of the time and date.
2) Press it when you want to adjust the tracking manually.

50 Tracking/Date/Time Set Button [DATE/TIME SET • TRACKING ▶]
1) Press it to change the figures during the setting of the time and date.
2) Press it when you want to adjust the tracking manually.

51 Pause Button [PAUSE]
Press this button during playback to be able to watch a still picture.

52 Rewind/Review Button [REW/⊟]
Press this button to rewind the tape.

53 Audio Dubbing Button [A.DUB]
Press this button to add new sound on a recorded tape with the Audio Dubbing Function.

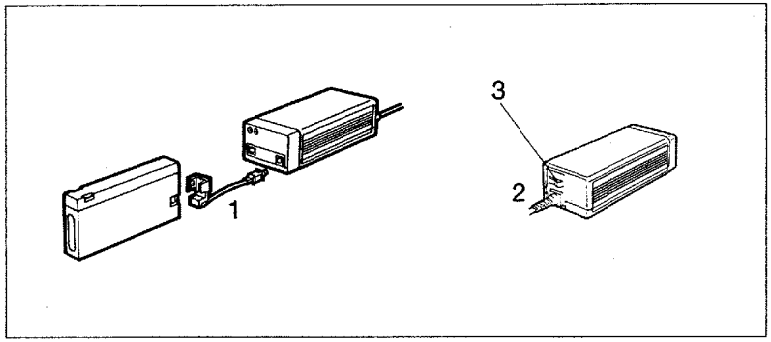
54 Stop Button [STOP]
Press this button to stop the playback.

55 Play Button [PLAY]
Press this button to start the playback.

56 Still Advance Button [STILL ADV]
After pressing the Pause Button, press this button to advance the still picture frame by frame.

57 Fast Forward/Cue Button [⊟/FF]
Press this button to wind the tape forward.

58 Insert Button [INSERT]
Press this button to insert new scenes on a previously recorded cassette tape.



Using the Battery Pack

■ Charge the Battery Pack

1 **Connect the Battery Pack and the AC Adaptor with the Battery Pack Charging Connector.**

2 **Connect the Power Cable of the AC Adaptor to the Mains.**

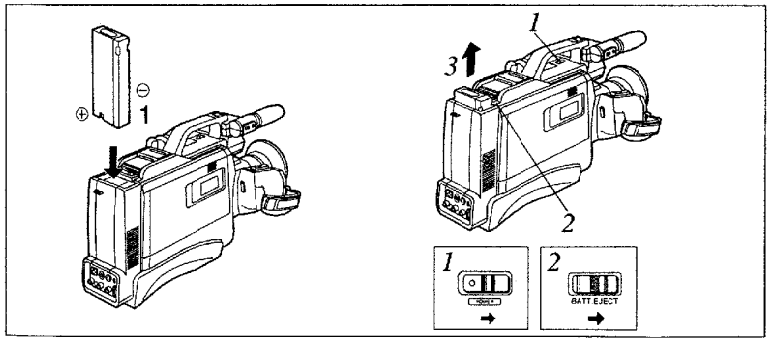
3 **Turn the AC Adaptor on.**

Notes:
- When the AC Adaptor is connected to the Movie Camera and the Movie Camera is turned off, it is possible to charge two Battery Packs simultaneously—one connected to the AC Adaptor and the other inserted into the Movie Camera. However, charging them at the same time takes twice as long as charging only one Battery Pack.
- Charge the Battery Pack within a temperature range of 10°C–35°C.
- Charging 2 Battery Packs simultaneously takes twice as long as charging 1 Battery Pack alone.

Charging Indication Lamp:
When charging is started, the red lamp lights up. When about 45 minutes of charging time remain, the lamp will change to green. The Charging Indicator will go out about 100 minutes after charging starts. However, the Battery Pack should be charged at least 3 hours for extended use.

Operation Time:
With a fully charged Battery Pack (VW-VBF2E), the Movie Camera can be used (in record mode only) continuously for approx. 120 minutes at 25°C. However, depending on how often the various functions listed below are used, and depending on the shooting conditions, the actual operation time may be considerably shorter.
- Shooting start/stop
- Auto focus
- Zoom function
- Playback, fast forward, rewind, and other operations
- Use of the Movie Camera in low temperature

Therefore, it is recommended to take along a charged spare Battery Pack.



Using the Battery Pack (cont'd)

■ How to Insert the Battery Pack

1 **Insert the Battery Pack until it locks with a click.**

Note:
Insert the Battery Pack with its + side facing the rear of the Movie Camera

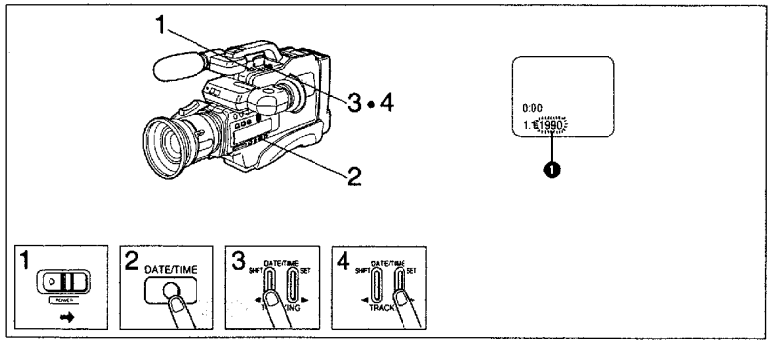
■ How to Remove the Battery Pack

1 **Turn the Movie Camera off.**

2 **Slide the [BATT. EJECT] Lever in the direction of the arrow.**

3 **Pull out the Battery Pack.**

Caution:
If the Battery Pack is removed during recording or playback, the tape remains wound around the video head cylinder and could become damaged.
This is also the case during the loading and unloading of the tape.



Setting the Clock

■ How to Set the Date and Time

At the time of purchase, the clock does not show the correct time and must first be adjusted.

1 **Turn the Movie Camera on.**

2 **Press the [DATE/TIME] Button.**

3 **Keep pressing the [SHIFT] Button for more than about 2 seconds.**
- The year portion ❶ of the Date/Time Indication starts to flash.

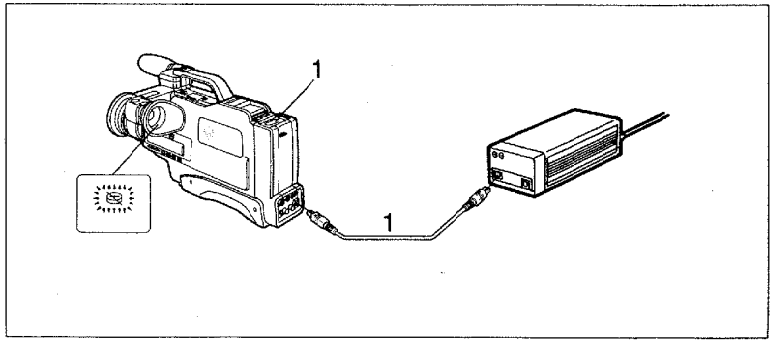
- The flashing portion of the Date/Time Indication can be changed with the [SHIFT] Button in the following order:

→Year→Month→Day→Hour→Minute→" "→

4 **Press the [SET] Button to change the figures.**

Year:	1990→1991→ ..... →2089→1990→...
Month:	1→2→ ..... →12→1→...
Day:	1→2→ ..... →31→1→...
Hour:	0→1→ ..... →23→0→...
Minute:	00→01→ ..... →59→00→...

- Repeat procedures 3 and 4 until all items have been set correctly.
- Once the date and time are set, press the [SHIFT] Button in response to an accurate time source so that the clock begins to function.



Setting the Clock (cont'd)

■ The Built-in lithium battery

A built-in rechargeable lithium battery maintains the operation of the built-in clock when the Movie Camera is turned off. When the Movie Camera is in operation, this battery is recharged automatically.
However, if the Movie Camera is not used for a very long time, the lithium battery can become exhausted. In this case, the indication "⊠" in the Viewfinder flashes and the date and time return to the initial indication "1.1.1990".

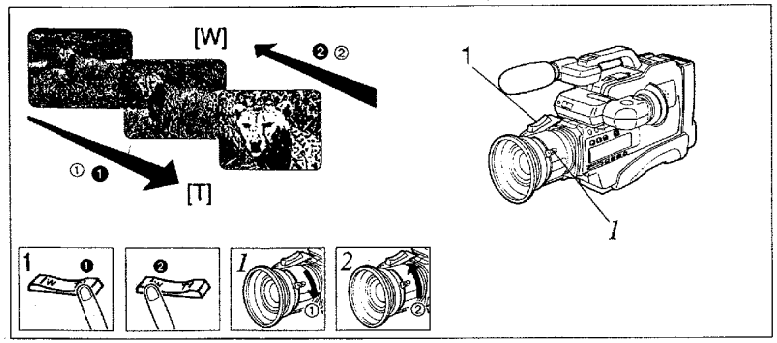
■ How to Recharge the Built-in Lithium Battery

If the indication "⊠" in the Viewfinder flashes for approx. 10 seconds when turning the Movie Camera on, the lithium battery needs to be recharged as follows:

1 **Connect the Movie Camera to the AC Adaptor or insert the Battery Pack into the Movie Camera.**

2 **Leave the Movie Camera for 20 hours.**
The Movie Camera does not need to be turned on.

- When the lithium battery is fully charged, it can maintain the operation of the clock for approx. one year.



Shooting with the Zoom Function

■ Using the Power Zoom Function

The zoom range extends from 1× (wide-angle) to 12× (tele).
To make your zoom shots more impressive and to achieve exactly the desired effect, do it like the professionals: before actually shooting, make a trial run of the zooming.

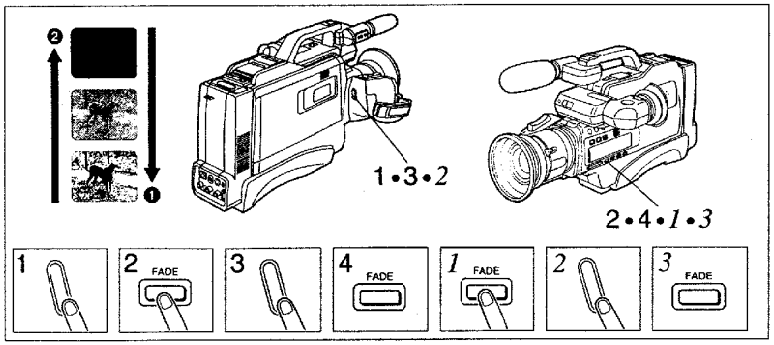
1 Keep pressing the [T] Zoom Button to zoom toward telephoto.
(The subject appears closer ❶.)
Keep pressing the [W] Zoom Button to zoom toward wide-angle.
(The subject appears further away ❷.)

■ Using the Manual Zoom

Quick zooming is possible by manualy turning the Manual Zoom Lever up or down.

1 **Turn the Manual Zoom Lever.**
Turn it downward ① to zoom toward telephoto.
Turn it upward ② to zoom toward wide-angle.

Notes:
- Do not operate the [W] or [T] Zoom Button and the Manual Zoom Lever simultaneously, because this could cause the zoom drive to malfunction.
- Quick manual zooming causes the subject to temporarily go out of focus.
  The Manual Zoom Function is mainly intended for framing a scene (giving the subject the desired size within the picture) before starting to shoot.
- When slowly turning the Manual Zoom Lever in the Manual Focus Mode, the subject temporarily goes out of focus. For slow zooming, it is recommended to use the [W] or [T] Zoom Button.



Shooting with the Fade Function

■ How to Fade in ❶

Fading in from black is very effective at the beginning of a movie and for soft transitions between scenes.

1 Press the Start/Stop Button to pause the shooting.

2 Keep pressing the [FADE] Button.

3 After the picture in the Viewfinder has disappeared, press the Start/Stop Button to start the shooting.

4 After about 3 seconds, release the [FADE] Button.

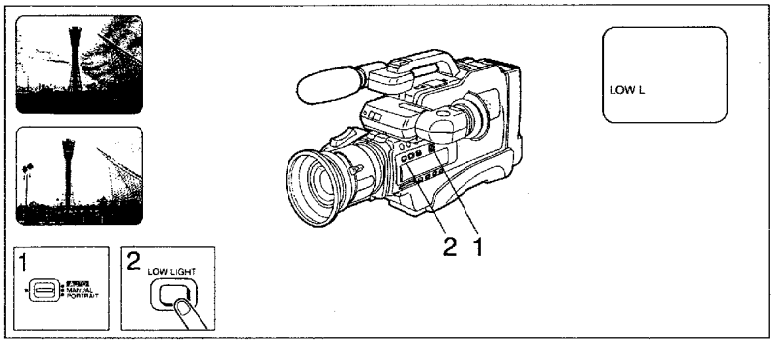
■ How to Fade out ❷

Fading out to black is convenient at the end of a scene to create a soft ending.

1 **Keep pressing the [FADE] Button during shooting.**

2 **After the picture has disappeared, press the Start/Stop Button to stop the shooting.**

3 **Release the [FADE] Button.**

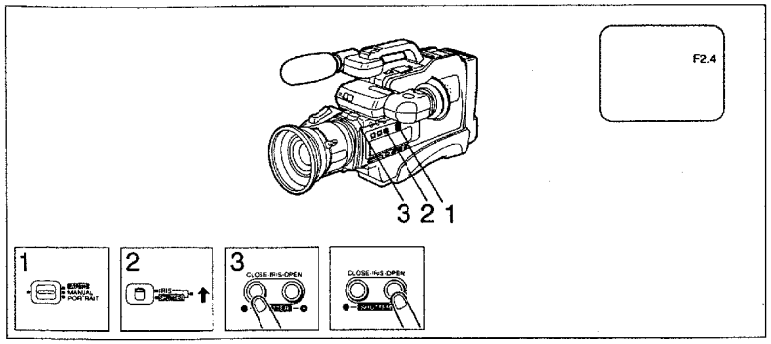


Shooting Sunsets or Other Evening Scenes (Low Light Function)

1 Set the [AUTO/MANUAL/PORTRAIT] Mode Selector Switch to "MANUAL".

2 Press the [LOW LIGHT] Button.
- The "LOW L" Indication appears.
- This increases the sensitivity compared to the "AUTO" setting of the Mode Selector Switch and assures stable images with relatively weak contrast.

Notes:
- Even if this mode is used for outdoor shooting in the daytime, the result will be almost the same as when the Mode Selector Switch is set to "AUTO".
- In the Portrait Mode, the Lowlight Function is activated.



Shooting Backlit Scenes

(Iris Adjustment)

This function makes it possible to brighten up the subject when shooting a backlit scene.

1 **Set the [AUTO/MANUAL/PORTRAIT] Mode Selector Switch to "MANUAL".**

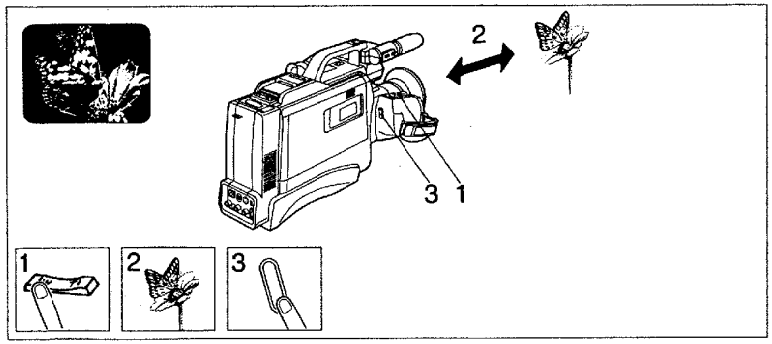
2 **Press the [IRIS/SHUTTER] Switch to "IRIS".**

3 **Press the [OPEN] or [CLOSE] Button repeatedly to select the desired F Number.**
- The F Number indication appears.

- The F Number can be changed in 18 steps:
  OP G+2, OP G+1, OPEN, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14, F16, F19, CLOSE

■ To Return to the Standard Iris Setting...
- Press the [IRIS OPEN] Button and [IRIS CLOSE] Button simultaneously for more than 1 second.
- Returning to the standard iris setting is also possible by setting the [AUTO/MANUAL/PORTRAIT] Mode Selector Switch to "AUTO".

Cautions for Shooting Backlit Subjects
- The sky may become whitish.
- In case of extremely strong backlight, it may not be possible to brighten up the subject sufficiently.
- When shooting with the sun striking the subject at an angle, star-shaped light reflexes may be recorded in the picture.



Shooting with the Macro Function

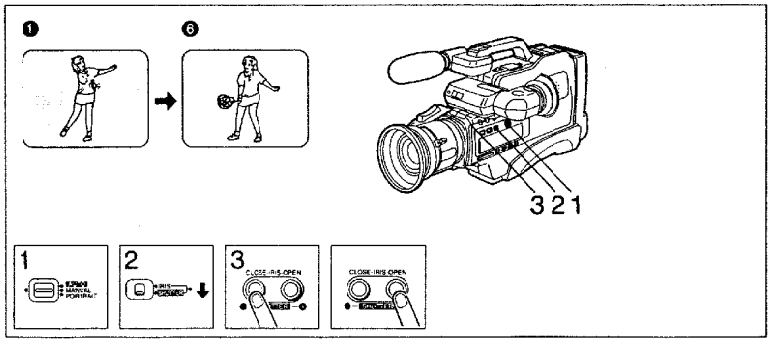
The Macro Close-up Function makes it possible to shoot very small objects, photos, printed matter, insects and many other things.

1 **Keep pressing the [W] Zoom Button to zoom to the maximum wide-angle position.**

2 **Approach the subject to the desired distance.**
- The focus will be adjusted automatically (Auto Focus Mode).

3 **Press the Start/Stop Button.**
- The shooting starts.

Hints for Shooting with the Macro Close-up Function
- To get more or less of the subject into the picture, change the distance between the lens and the subject; do not use the [W] or [T] Zoom Button.
- As the depth of field is very small in macro shooting, even slight camera movements can cause the subject to go out of focus. Therefore, it is recommended to use a tripod (optional).
- When the zoom lens is in its maximum telephoto position, the minimum shooting distance between lens and subject is 1.5m.
- In macro close-up shooting, the subject can be approached down to a minimum distance of 4 cm between lens and subject. It is recommended to use the Auto Focus Mode. However, with a stable camera position (tripod, etc.), the Manual Focus Mode can also be used.



Shooting Fast-Moving Subjects

(High-Speed Shutter Function)

A range of different high shutter speeds makes it possible to shoot scenes with fast movements. When scenes recorded with a high shutter speed are later played back on a VCR equipped with super still and super fine slow motion functions, still and slow motion playback with very sharp picture contours and brilliant details can be obtained.

1 **Set the [AUTO/MANUAL/PORTRAIT] Mode Selector Switch to "MANUAL".**

2 **Set the [IRIS/SHUTTER] Switch to "SHUTTER".**

3 **Press the ⊖ or ⊕ Button repeatedly to select the desired shutter speed.**
- The shutter speed can be changed in 8 steps:

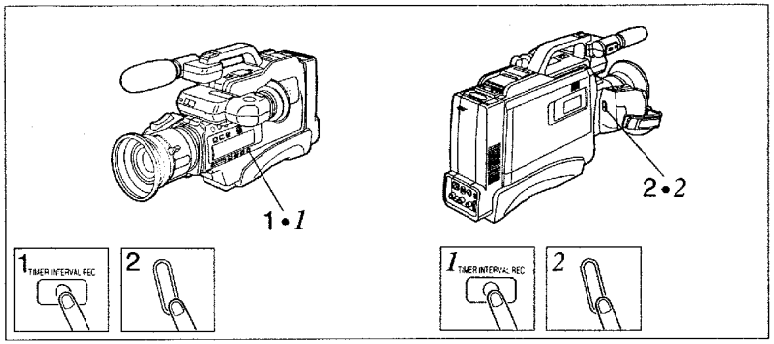
Pressing the [SHUTTER +] Button

❶	❷	❸	❹	❺	❻	❼	❽
1/50	1/120	1/250	1/500	1/1000	1/2000	1/4000	1/8000

(No indication)
Normal

Pressing the [SHUTTER −] Button

Conditions for Shooting with the High-Speed Shutter
- The subject must be brightly lit by sunlight or other strong illumination, with little shade.
- When shooting under fluorescent lamps, the picture will be adversely influenced by flickering.
- When the picture is played back in the normal playback mode, the picture movement may not be as smooth as normally.
- The playback picture will be slightly darker than the picture recorded without using the High-Speed Shutter Function.



Self-Timer Recording and Interval Recording

■ Self-Timer Recording

1 Press the [TIMER/INTERVAL REC] Button during shooting pause to select the desired shooting mode.

- When the Timer/Interval Recording Button is pressed once, the "SLF20" indication appears in the Viewfinder.
- When this button is pressed one more time, the "SLF" indication appears in the Viewfinder.

2 Press the Start/Stop Button.

- The self-timer recording will start 10 seconds later.
- When "SLF20" is indicated, the recording will be made for 20 seconds.
  When "SLF" is indicated, the recording will be made until the tape reaches its end.

To stop the Self-Timer Recording Midway
Press the Start/Stop Button, and the self-timer recording will be cancelled.

■ Interval Recording

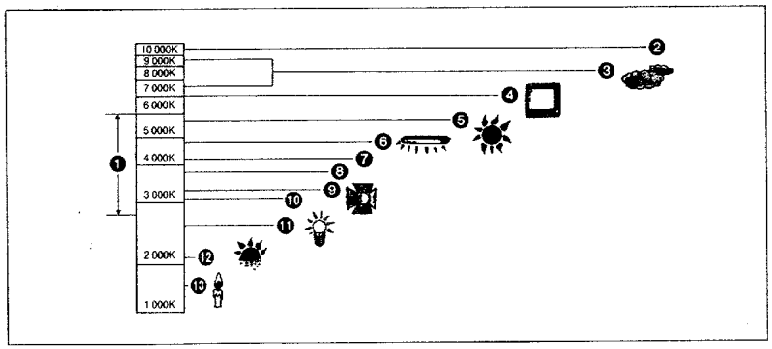
This recording function automatically makes recordings of approx. 1 second duration at 1-minute intervals. (However, the initial recording will last for about 5 seconds.) The interval recording will continue for a maximum of 10 hours, after which the Movie Camera will turn itself off.

1 **Press the [TIMER/INTERVAL REC] Button three times in the shooting pause mode.**

- "INT" will appear in the Viewfinder.

2 **Press the Start/Stop Button.**

To stop the Interval Recording Midway
Press the Start/Stop Button, and the interval recording will be cancelled.



Automatic White Balance Adjustment (Cont'd)

■ What is the Colour Temperature of the Light Source

The colour temperature of the light source is measured in Kelvin (K). The higher the Kelvin value is, the more bluish the light is; the lower the value, the more reddish the light is. This is not directly related to the brightness.

1. Control range of the Auto White Balance
2. Blue sky
3. Cloudy sky
4. TV screen
5. Sunlight
6. White fluorescent light
7. 2 hours after sunrise or before sunset
8. 1 hour after sunrise or before sunset
9. Halogen light bulb
10. 30 minutes after sunrise or before sunset
11. Incandescent electric light bulb
12. Sunrise or sunset
13. Candlelight

For the following types of scenes, the Automatic White Balance Adjustment Mode cannot provide satisfactory results, even if the light source is within the range 1. Use the Manual White Balance Adjustment Mode instead.

■ When a Scene Is Lit by Several Light Sources

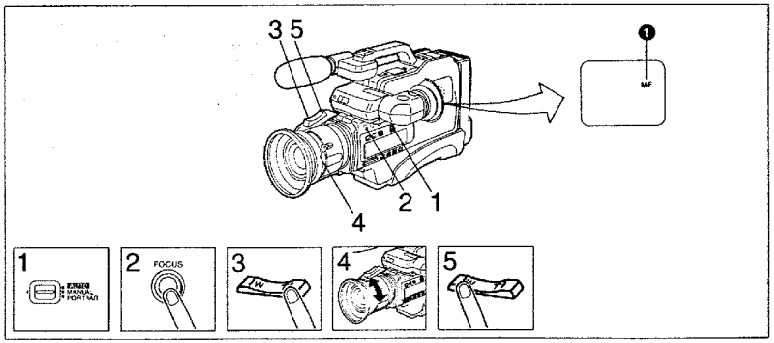
If there is more than one light source for a scene, the Movie Camera cannot decide which of the stored White Balance Adjustment settings to use. Therefore, precise Automatic White Balance Adjustment is not possible in such cases.

■ When Shooting an Outdoor Scene from Inside a Building

As the colour of the light entering through the lens differs greatly from that received by the White Balance Sensor, the Automatic White Balance Adjustment Function compensates for indoor lighting and this results in unnatural colours.

■ When Shooting in a Very Dark Place

As the colour information entering through the lens is greatly reduced, the Automatic White Balance Adjustment Function cannot correctly compensate for the colour of the lighting and this results in unnatural colours.



Manual Focus Function

1 Set the [AUTO/MANUAL/PORTRAIT] Mode Selector Switch to "MANUAL".

2 Press the [FOCUS] Button.

- The "MF" indication appears in the Viewfinder 1.

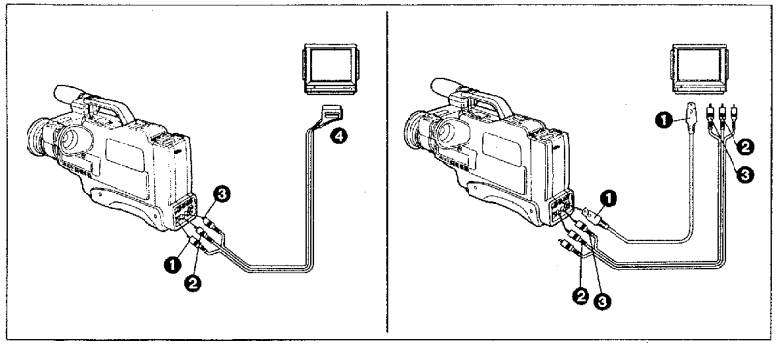
3 Press the [T] Zoom Button to zoom in on the subject to be focused.

4 Turn the Focus Ring to adjust the focus.

5 Press the [W] Zoom Button to zoom back as desired.

■ To Change back to the Auto Focus Mode...
Press the [FOCUS] Button to make the "MF" indication disappear or set the [AUTO/MANUAL/PORTRAIT] Mode Selector Switch to "AUTO".

Note:
When using the Manual Focus Mode, always adjust the lens with the Zoom [T] Button in the maximum tele setting.
This will ensure that the subject remains precisely focused throughout the zoom range from the maximum tele to maximum wide-angle setting.



Playback via a TV Set (Connections)

■ **Playback via a TV Set with AV Input Socket**

•Turn off the Movie Camera and the TV set.

Connect the Movie Camera to the TV set.

Movie Camera		TV Set
Video Output Socket ❶	→	AV Input Socket ❹
Audio Output Socket (L) ❷	→	
Audio Output Socket (R) ❸	→	

■ **Activate the Playback Operation**

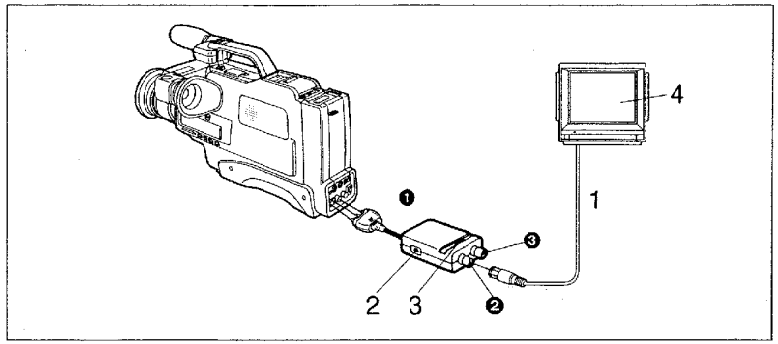
■ **Playback via a TV set with S-Video Input Socket**

•Turn off the Movie Camera and the TV set.

Connect the Movie Camera to the TV set.

Movie Camera		TV Set
S-Video Output Socket ❶	→	S-Video Input Socket ❶
Audio Output Socket (L) ❷	→	Audio Input Socket (L) ❷
Audio Output Socket (R) ❸	→	Audio Input Socket (R) ❸

■ **Activate the Playback Operation**



Playback via a TV Set (cont'd)

■ **Playback via a TV Set without AV Socket**

•Turn off the Movie Camera and the TV set.

1 Connect the Movie Camera to the TV set.

Movie Camera ❶ ↔ RF Adaptor (optional) ❷ RF OUT ← ❷ RF IN TV Set

❸ RF IN ↓ Antenna

2 Set the PAL System Selector Switch to the correct position.

•Set to "G" for continental Europe. If set to the wrong position, the sound will be muted.
•Set to "I" for the UK.

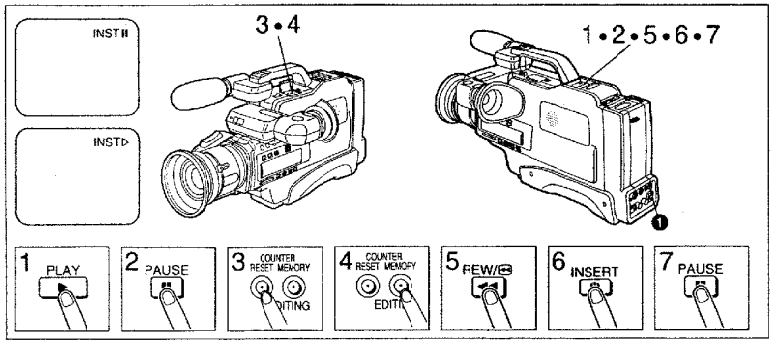
3 Set the TV/VTR Selector Switch on the RF Adaptor to:

VTR: For playing back a video cassette.
TV: For watching TV.

4 Select an unused TV programme position (channel).

•Follow the tuning procedure outlined in the instruction booklet for your TV set to re-tune your TV set to the UHF transmission channel 36. The camera picture now appears on the TV screen.
•If in doubt, consult your local video dealer.

■ **Activate the Playback Operation**



Insert Editing

Insert Editing lets you replace pictures on a recorded tape with new scenes. (The original sound remains on the normal audio track.)
Note:
When performing Insert Editing, it is recommended to change over to the 4-digit Tape Counter.

1 Press the [PLAY] Button.

2 Press the [PAUSE] Button.

•Play back the tape to locate the point where the Insert Editing is to finish, and press the Pause Button at that point.

3 Press the [RESET] Button.

4 Press the [MEMORY/EDITING] Button.

•The indication "M 0000" appears in the Viewfinder.

5 Press the [REW/◀◀] Button.

•Rewind the tape to locate the point where the Insert Editing is to start, and release the button at that point.

6 Press the [INSERT] Button.

•The "INST ▮▮" indication appears in the Viewfinder.

7 Press the [PAUSE] Button again.

•The Insert Editing starts.
•The "INST ▷" indication appears in the Viewfinder.

The Insert Editing will automatically finish at the point where the counter indicates "M 0000".
•To stop the Insert Editing midway, press the Pause Button.

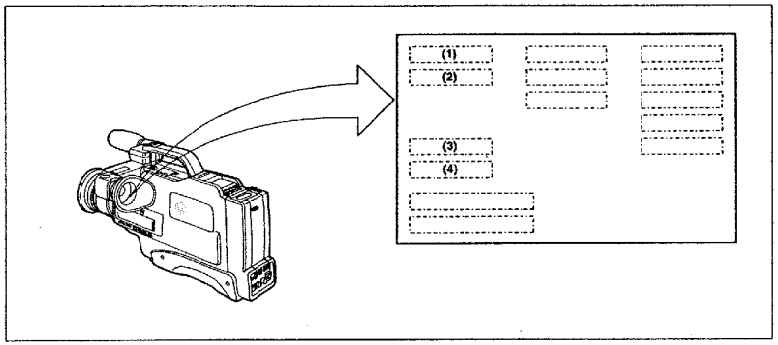
Insert Editing (cont'd)

■ When playing back a cassette tape on which insert editing has been performed...

Use the [HiFi/MIX/NORMAL] Switch ❶ to select the sound to be played back.

■ If you perform Insert Editing with the Linear Time Counter Indication Displayed, please note the following:

- To start Insert Editing from the Insert Editing Pause Mode after putting the Movie Camera in the Still Mode by pressing the [STOP] Button, press the [PLAY] Button.
- Pressing the [STOP] Button while in the Insert Editing Mode or in the Insert Editing Pause Mode cancels that mode and puts the Movie Camera in the Still Mode.
- As the memory stop function does not work when the Linear Time Counter Indication is displayed, the tape does not stop when the Insert Editing is finished.
- If you press the [STOP] Button to put the Movie Camera in the Still Moce and then put it in the Insert Editing Pause Mode, the "❚❚" indication does not appear in the Viewfinder.



Indications in the Viewfinder

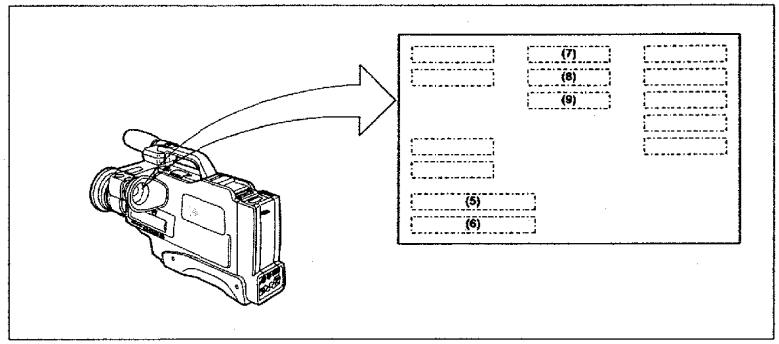
(1) Recording System indications
"S" S-VHS system recording
- When the "S" indication is not visible the recording is made in the VHS system.
- The recording system can be changed by sliding the [S-VHS ON/AUTO/OFF] Switch.

(2) Manual White Balance indications
In the Manual White Balance Adjustment Mode:
" " Indication flashes slowly ..... Adjustment is not made.
" " Indication flashes rapidly ..... While adjustment is being performed.
" " Indication is lit..... The adjustment has been completed.
In the Automatic White Balance Adjustment Mode (initial mode), none of these indications is lit.

(3) Low Light indication
"LOW L"
- When the [LOW LIGHT] Button is pressed, the "LOW L" Indication appears.

(4) Self-Timer and Interval Indications
At every press of the [TIMER/INTERVAL REC] Button, the indication changes in the following order:

→ no indication → "SLF20" → "SLF" → "INT" →



Indications in the Viewfinder (cont'd)

- This indication flashes when a recording is started and it indicates that an index signal is being recorded.

(5) Time indication
"12:30"
- The current time (hour and minute) is displayed. The time must initially be set.
- The time is shown in the 24-hour clock system.
- It is possible to display the date alone, or the time and date together.

(6) Date indication
"15.10.1996"
- The year, month, and day are displayed. The date must initially be set.

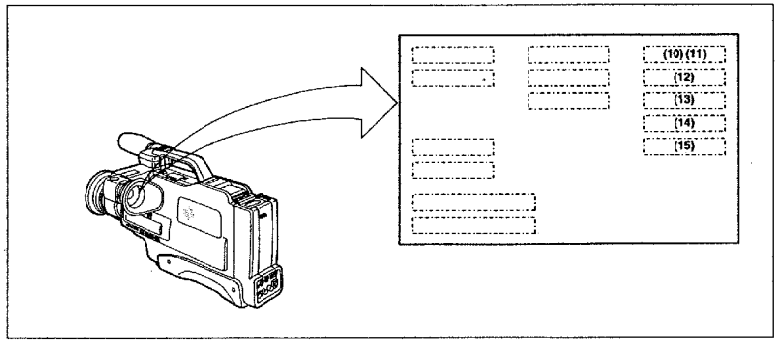
(7) Remaining Battery Power/Index indication
"E——F"
- The "—" indications begin to disappear from right to left as the power of the Battery Pack is being used up.

"INDEX"

(8) Tape Counter/Elapsed Tape Time indication
"M 0123"
- To be able to play back a certain scene at a later time, press the [MEMORY/EDITING] Button at the beginning of that scene. When the [⏩/FF] Button or the [REW/⏪] Button is later pressed, it is possible to easily locate this scene. ("M" means Memory.)

"0:00.00"
- It is recommended to use the 4-digit Tape Counter for all general shooting and playback and to use the Linear Time Counter only for editing.

(9) Warning/Alarm indications
The following indications are displayed to inform about the conditions of the Movie Camera.
"DEW", "⚙", "🔋", "⏏", "✉" and "END".



Indications in the Viewfinder (cont'd)

(10) Tape Running Indications
Depending on the operation being currently performed by the Movie Camera, one of the following indications appears.

"▷"	During Playback Camera Search (in forward direction)
"❚❚"	During Still Playback
"◁◁"	Rewind/Review Mode Camera Search (in reverse direction)
"▷▷"	Fast Forward/Cue Mode
INST ▷	Insert Editing mode
INST ❚❚	Insert Editing Pause mode
A.DUB ▷	Audio Dubbing mode
A.DUB ❚❚	Audio Dubbing Pause mode

(11) Shooting Mode indications

"REC"	During Shooting
"PAUSE"	During Shooting Pause
"CHK"	During Rec Review

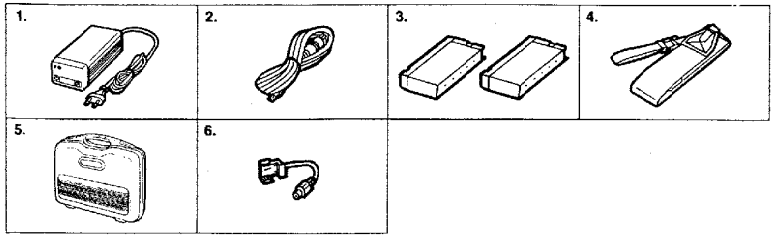
(12) Magnification Ratio indication
- It appears when the Movie Camera is turned on.

(13) F Number indication
The desired F Number can be selected by repeatedly pressing the [IRIS CLOSE] or [IRIS OPEN] Button.
OP G+2, OP G+1, OPEN, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14, F16, F19, CLOSE

(14) Shutter Speed Indications
The desired shutter speed can be selected by repeatedly pressing the [SHUTTER −] or [SHUTTER +] Button. The numbers in the Shutter Speed Indication show fractions of a second, e.g. 1/120 = 1/120th of a second.
1/120, 1/250, 1/500, 1/1000, 1/2000 1/4000, 1/8000
- The initial shutter speed is 1/50 sec. (no indication).

(15) Manual Focus indication
"MF" ("MF" means Manual Focus.)
Pressing the [FOCUS] Button will turn the Automatic Focus Mode on or off. The "MF" Indication indicates that the Manual Focus Mode is seected.
- Initially, the Auto Focus Mode is selected ("MF" Indication is off).

Checklist for the Standard Accessories

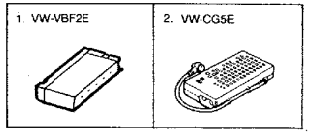


1. **AC Adaptor**
   For supplying power to the Movie Camera or for charging the Battery Pack
2. **DC Input Cable**
   For connection to the AC Adaptor
3. **Battery Packs**
   For supplying power to the Movie Camera
4. **Shoulder Strap**
5. **System Case**
6. **Battery Pack Charging Connector**
   To recharge the Battery Pack, connect it to the AC Adaptor with this connector.

CAUTION: TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE ONLY THE RECOMMENDED ACCESSORIES.

Information for your safety

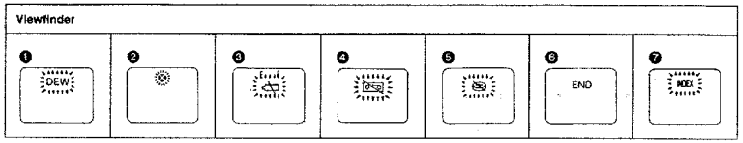
Optional Accessories



1. Battery Pack
2. Character Generator

Note:
Before using the Character Generator (optional), make sure that a backup battery s inserted in it.

Warning/Alarm Indications in the Viewfinder



These indications are displayed in the Viewfinder to inform you about the conditions of the Movie Camera.

1. When condensation has formed inside the Movie Camera, the "DEW" indication flashes and a few seconds ater, the Movie Camera will turn itself off.
   Press the [TAPE EJECT] Button, remove the video cassete and wait until the "DEW" indication disappears.
2. Video Head Clogging.
   Consult qualified service personnel.
3. The "—" indications begin to disappear one after another as the power of the Battery Pack weakens.
   When the last bar has disappeared, the Battery Indication "◁" will flash.
   When a Battery Pack is inserted, this indication initially always shows "E-----F", regardless of the Battery Pack's charging condition.
4. There is no video cassette inside, or the tab of the inserted video cassette is broken out.
   The indication flashes to warn that shooting is not possible. Insert a video cassette with intact tab. If the tab is broken out, seal the hole with adhesive tape.
5. When the Lithium Battery (for the Auto Date Function, etc.) is exhausted, this indication will flash for 10 seconds after the Movie Camera has been turned on.
6. During shooting: The tape has reached its end. Replace the video cassette with a new one whose tab is intact.
7. It appears few seconds while an index signal is being recorded.

SECTION 2
MAINTENANCE & ADJUSTMENT PROCEDURES

2 - 1. MAINTENANCE CHART

REGULAR MAINTENANCE

The purpose of periodic maintenance is to preserve the functioning of this machine throughout its useful life. The user or service dealer should perform these maintenance regularly to ensure that maximum utility is obtained from the machine.

The VCR is a complicated place of equipment. It contains many belts, rollers, heads etc., which become worn, and deterlorate as time goes by, causing trouble. Dust and dirt will also impede the proper functioning of the machine. In light of this, it is very important that overall maintenance be done according to the maintenance chart to maintain the functions of the VCR, and to avoid accidental problems. This maintenance should also be performed after any repairs are done on the equipment.

The VCR used for business applications requires particular attention for several reasons. The installation conditions and applications are not always the best. Long use times, or poor environmental conditions may adversely affect the lifespan and performance of the machine. Regular maintenance assures that the purchaser obtains the maximum value for his expenditure. Accordingly, the necessity of regular maintenance should be fully explained at the time of sale, as well as during after-sale repairs.

MAINTENANCE CHART

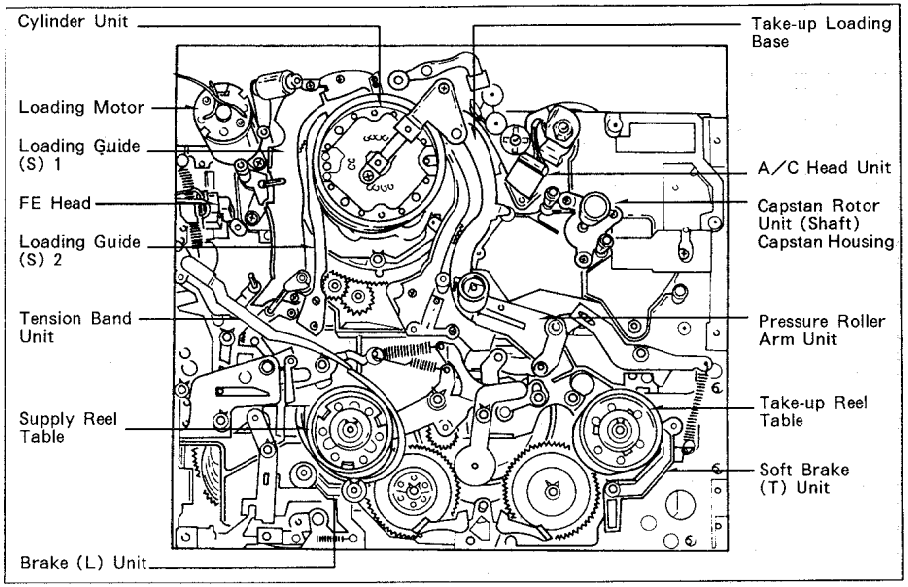
The following periodic maintenance is required to prolong the life of the machine.

Ref. No. IN P/L	Parts Name	Hour										Ref. No. IN P/L	Parts Name	Hour									
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000			500	1000	1500	2000	2500	3000	3500	4000	4500	5000
—	Tape Transporters	●	●	●	●	●	●	●	●	●	●	253 (2)	Brake (R) Unit				◎				◎		
257 (2)	A/C Head Unit	●	●	●	●	●	●	●	◎	●	●	247 (2)	Tension Band Unit				◎				◎		
282 (2)	FE Head	●	●	●	●	●	●	●	◎	●	●	141 (1)	Loading Belt				◎				◎		
140 (1)	Cylinder Unit	●	◎	●	◎	●	◎	●	◎	●	◎	166 (1)	Capstan Belt				◎				◎		
123 (1)	Supply Reel Table	●	●	●	●△	●	●	●	●△	●	●△	242 (2)	Loading Motor Unit				◎				◎		
128 (1)	Takeup Reel Table	●	●	●	●△	●	●	●	◎△	●	●	238 (2)	Take-up Loading Base					■					■
164 (1)	Capstan Rotor U(Shaft)	●	●△	●	●△	●	●△	●	●△	●	●△	219 (2)	Loading Guide(S)(1)					■					■
274 (2)	Pinch Roller Arm(1) U	●	⊙	●	◎	●	⊙	●	◎	●	⊙	220 (2)	Loading Guide(S)(2)					■					■
254 (2)	Brake (L) Unit				◎				◎			—	Cam Gear Section and Hyper Pressure Section (Between Metal)								■		

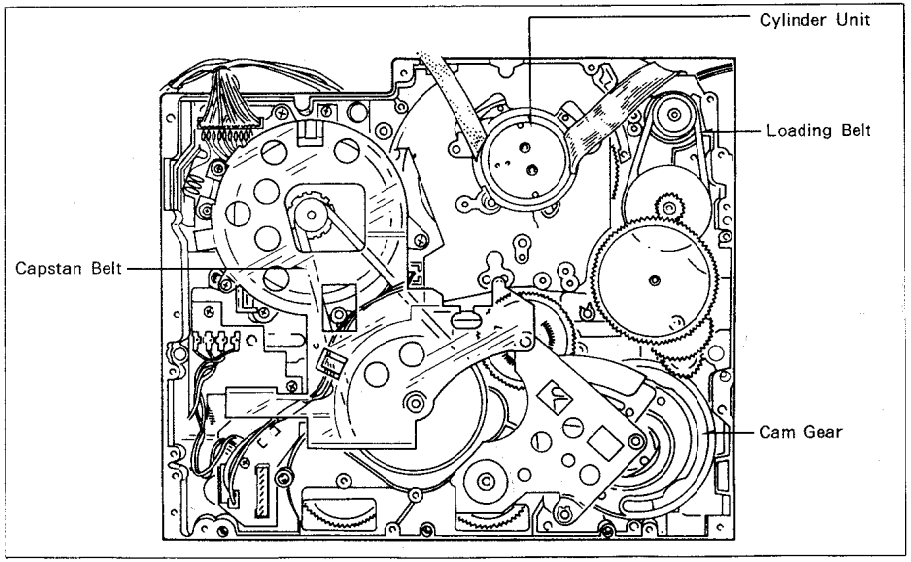
***NOTE:**

Symbol	Maintenance	Requirement	Remark
●	Cleaning	Ethyl-alcohol or Cleaning Liquid (Purchase locally)	Wipe dirt from the parts using soft cloth impregnated with Ethyl-Alcohol. Note: When cleaning rubber parts, avoid using excessive alcohol since it may accelerate deterioration of these parts. After cleaning with alcohol, wipe the alcohol quickly and thoroughly.
◎	Replacement	———	———
⊙	Replacement (in case)	———	If the regular cleaning has not been done.
△	Lubrication	Hydro HV100 Oil (VFK0131)	Supply one or two drops of oil.
■	Greasing	Molytne Grease (MOR265)	Wipe the old grease and apply new grease.

2-2. MECHANICAL PARTS LOCATION



TOP VIEW



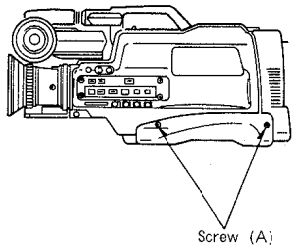
BOTTOM VIEW

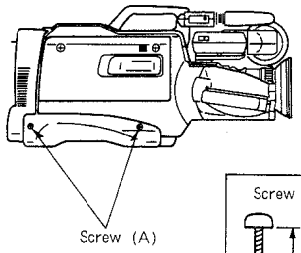
2-3. DISASSEMBLY PROCEDURES

Flow-Chart for Disassembly Procedure

NBR	ITEM/PART	Fig.	Removal (SCREW)
[1]	Shoulder Pad/ Lens Hood	①	4-SCREW (A) Pull the shoulder pad. Remove the lens hood (By rotating counter-clockwise.)
[2]	Cassette Cover	②	2-SCREW (B)
[3]	MIC Unit	③	2-SCREW (C/D) Slide the MIC unit. Disconnect (Connector on the MIC unit)
[4]	Side Case (R) Unit	③ ④ ⑥	3-SCREW (E) 9-SCREW (F/G/H) Lift the side case (R) unit slightly. Disconnect (Connector P4501)
[5]	Side Case (L) Unit	⑤	6-SCREW (B/G/I) Lift the side case (L) unit slightly. Disconnect (Connector on Main C.B.A. and Process C.B.A.)
[6]	Operation Panel Unit	⑥	Disconnect (Flexible connector FP6001)
[7]	Main C.B.A.	⑦	Unlock...2 locking Tabs (O) Disconnect (Connector P3001 and B3001)
[8]	Camera C.B.A.	⑧	1-SCREW (J) Disconnect (Connector FP301 and Flexible connector FP701) Lift up the camera C.B.A. slightly.
[9]	Camera Unit	⑨	2-SCREW (K)
[10]	CCD Drive C.B.A.	⑩	2-SCREW (L) Disconnect (Connector B202)
[11]	Lens Cover	⑪	2-SCREW (M)
[12]	Lens Unit	⑫	3-SCREW (N)
[13]	EVF Unit	⑬ ⑭ ⑮ ⑯	2-SCREW (O) 3-SCREW (P) Lift the CRT Assembly. Rotate... Nut (V) Pull the DY Assembly.

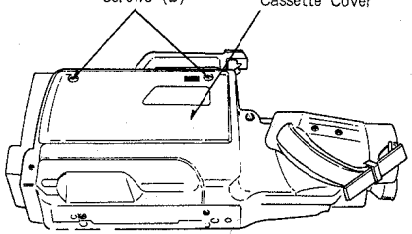
①





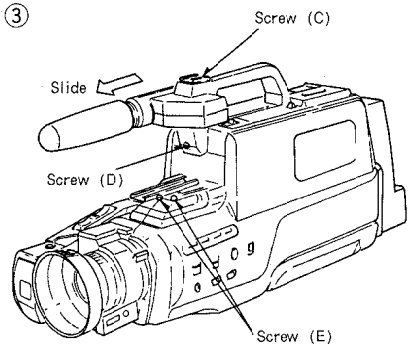
Screw (A)
5mm
BLACK

②



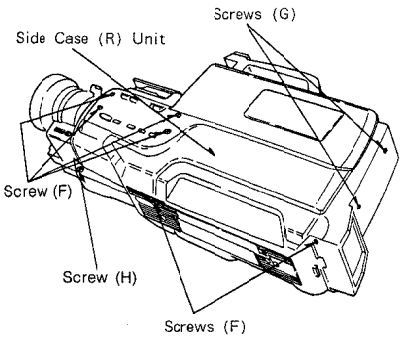
Screw (B)
6.5mm
BLACK

③



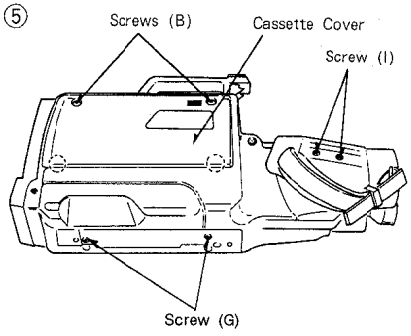
Screw (C)	Screw (D)	Screws (E)
17mm	5mm	17mm
BLACK	BLACK	BLACK

④



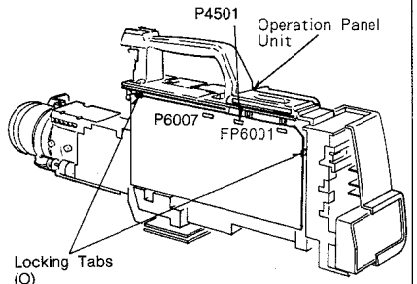
Screw (F)	Screw (G)	Screw (H)
5mm	5mm	10mm
BLACK	BLACK	BLACK

⑤



Screw (B)	Screw (G)	Screws (I)
6.5mm	5mm	27mm
BLACK	BLACK	BLACK

⑥



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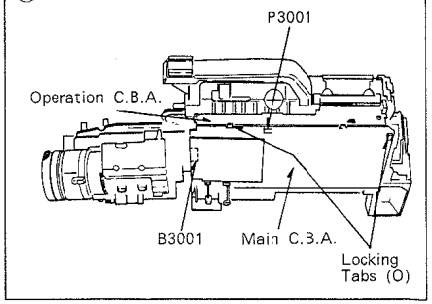
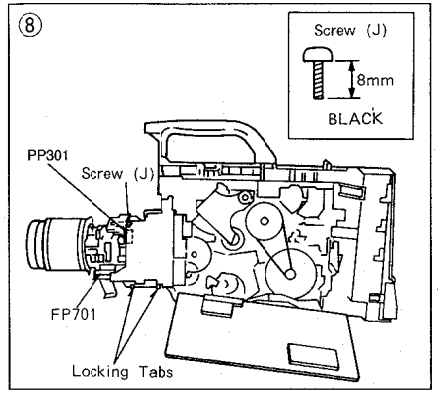
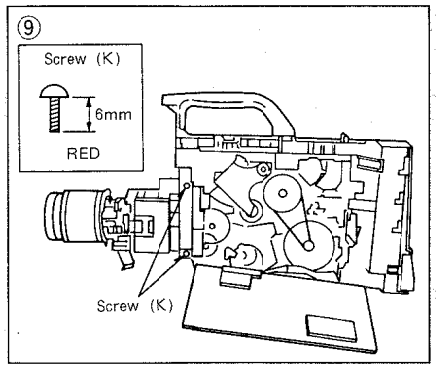
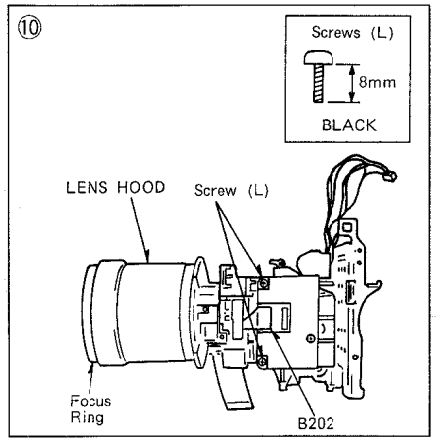
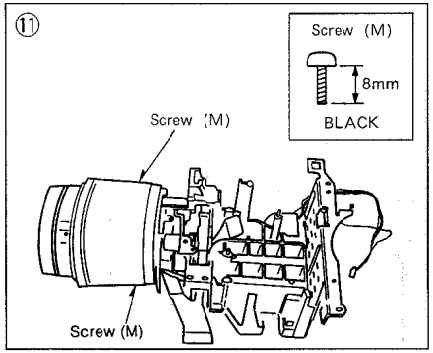
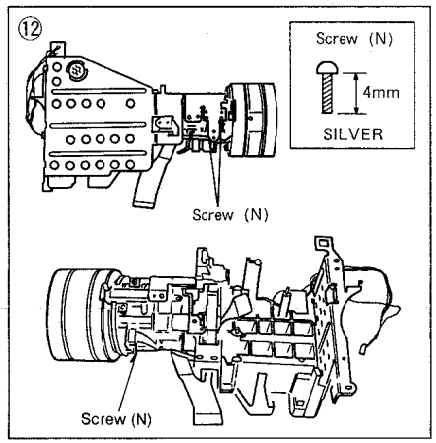


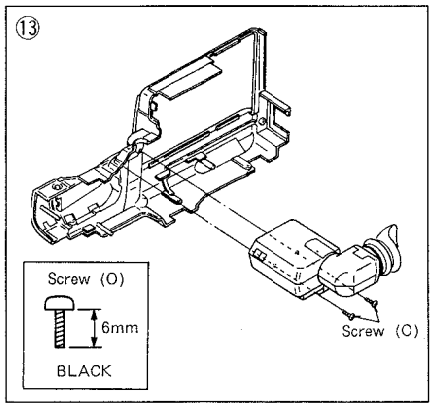


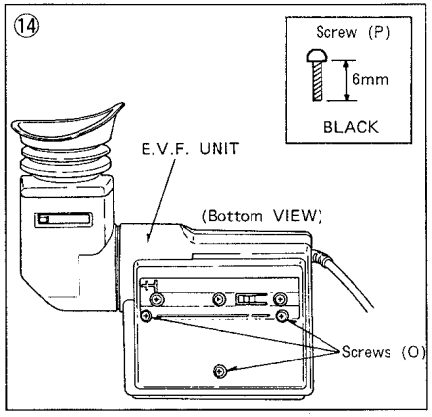


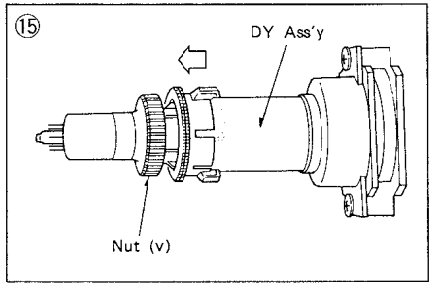


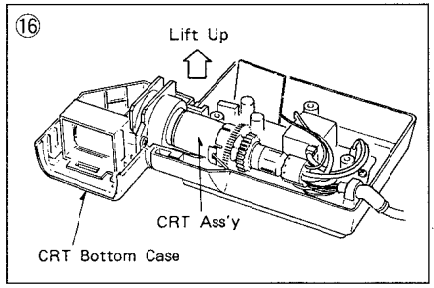












Battery Replacement

VL2020 size Button Type Battery is necessary for storing the date, time and selected tape speed in the memory, when the Movie Camera is turned off.

How to Exchange the Button Type Battery

Use only a "VL2020" size Button Type Battery.
The VL2020 is manufactured by Panasonic only.

CAUTIONS FOR BATTERY REPLACEMENT

Load the new battery with its polarities (+ and −) correctly aligned.

Remove the spent battery immediately and dispose of it.

Do not try to short-circuit, heat the battery and do not throw it into a fire.

Keep the button-type battery out of reach of children.
If a battery has been swallowed, consult a doctor immediately.

Do not grasp the button-type battery with metallic tweezers because this could short-circuit it.

"THE LITHIUM BATTERY IS A CRITICAL COMPONENT (TYPE NUMBER VL2020 MANUFACTURED BY PANASONIC).

IT MUST NEVER BE SUBJECTED TO EXCESSIVE HEAT OR DISCHARGE. IT MUST THEREFORE ONLY BE FITTED IN EQUIPMENT DESIGNED SPECIFICALLY FOR ITS USE.

REPLACEMENT BATTERIES MUST BE OF THE SAME TYPE AND MANUFACTURER. THEY MUST BE FITTED IN THE SAME MANNER AND LOCATION AS THE ORIGINAL BATTERY, WITH THE CORRECT POLARITY CONNECTIONS OBSERVED.

DO NOT ATTEMPT TO RE-CHARGE THE OLD BATTERY OR RE-USE IT FOR ANY OTHER PURPOSE. IT SHOULD BE DISPOSED OF IN WASTE PRODUCTS DESTINED FOR BURIAL RATHER THEN INCINERATION".

2-3-1. DISASSEMBLY PROCEDURES OF LENS UNIT

The following flowchart describes order or steps for removing the Lens Units and certain printed circuit boards in order to make access to the item needing service.
To reassemble the unit follow the steps in reverse order.

1. CCD Unit	Ref-No. 317
▽	
2. CCD Cushion & Crystal Filter	Ref-No. 315 316
▽	
3. Focus Motor Unit	Ref-No. 311
▽	
4. Zoom Motor Unit	Ref-No. 310
▽	
5. 2nd Moving Frame Unit	Ref-No. 303
▽	
6. Iris Unit	Ref-No. 306
▽	
7. Screw Shaft Unit	Ref-No. 304
▽	
8. Front Frame	Ref-No. 323
▽	
9. Focus Ring	Ref-No. 324
▽	
10. Rear Frame	Ref-No. 325
▽	

Note: Each Ref-numbers are equivalent to number on Fig. L2 and Parts List.

Fig. L1

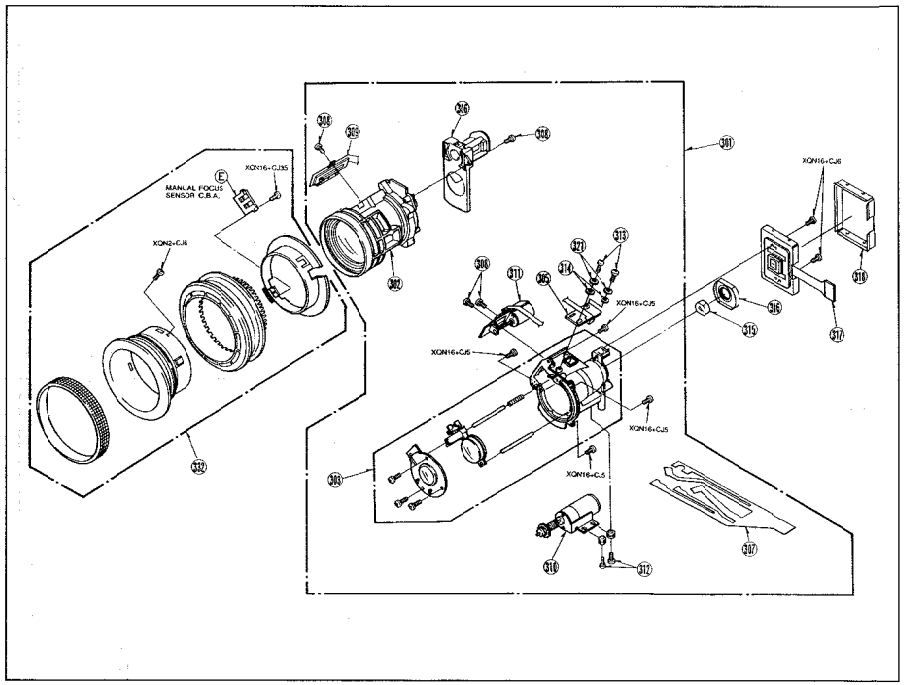


Fig. L2

2-4. REPLACEMENT PROCEDURES

2-4-1. PROCEDURE OF CLEANING OF CYLINDER UNIT

1. Position the video head to clean and hold the upper cylinder to keep it from turning while cleaning.
2. Gently rub the video head in direction of tape travel with the Head Cleaning Stick.
3. Repeat for the other three heads.

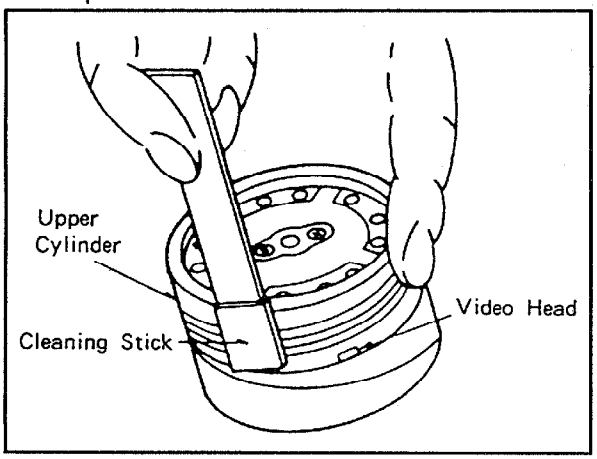


Figure R1

2-4-2. REPLACEMENT OF THE CYLINDER UNIT

Note: Dissaembly method is refer to Section 2-3

<Preparation>

1. Remove of Side Case(L) and cassette cover.
2. Remove of Side Case(R).
3. Open the Main C.B.A.

1. Remove screw (A) and remove the earth plate unit.

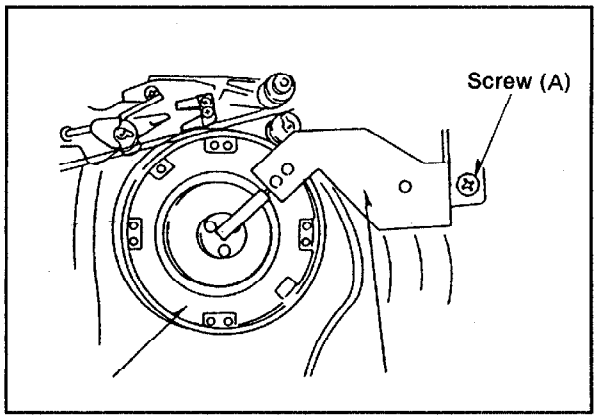


Figure R2

2. Disconnect connector FP2101 on the Main C.B.A.
3. Remove the 3 screws (B) and disconnect the connector.
4. Take out the Cylinder unit carefully.

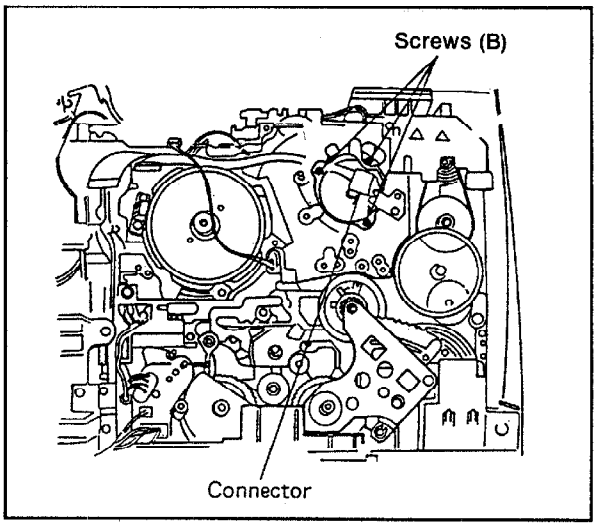


Figure R3

Note: Since there is very little clearance between the Cylinder Unit and the chassis, remove the Cylinder Unit carefully.

5. Reinstall the new Cylinder Unit, tighten the 3 screws and reconnect the connector.

Note:
1. Gently rub the video head in direction of tape travel with Head cleaning stick.
2. After replacement, confirm the performance.
   If any further maintenance is required, perform "TAPE INTER-CHANGE ABILITY ADJUSTMENT".

2-4-3. REPLACEMENT OF CAPSTAN MOTOR UNIT

* Equipment required:
  Reel Table Height Gauge (VFK0190)
* Specification ... 0.5 ± 0.05mm

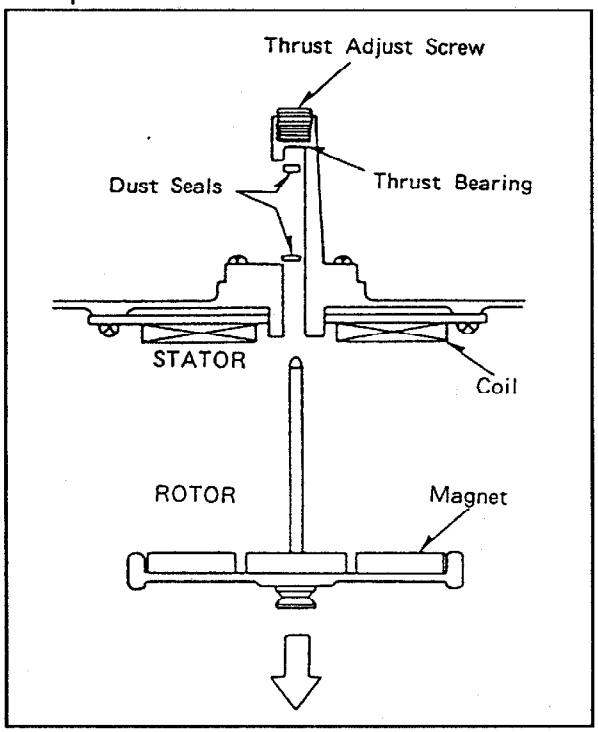


Figure R4

1. Remove 2 screws and take belt cover off. After that remove the capstan belt.
2. Tighten the Thrust Adjust Screw fully and pull the capstan rotor.

Note: In this time pay attention not to lose two pieces of Dust Seal.

3. Replace the new rotor with two pieces of Dust Seal.

Note:
1. Pay attention to the replaced new rotor not to shock because of magnet absorption.
   So hold the rotor firmly and replace it carefully.
2. In this replacement, do not touch the Capstan shaft with any hard material like drivers or tweezers. To prevent scratches and possible tape damage.

4. After replacement wipe off the Capstan shaft to remove oil, grease or dust.
5. Turn Thrust Adjust Screw clockwise till the rotor is just separating from the stator.
6. Turn Thrust Adjust Screw clockwise to another 180 degrees from above position

Note: If the Thrust Adjust Screw is fully opened, you have to pay attention not to lose Thrust Bearing.
When it is set, confirm that the direction of Thrust Bearing is correct as shown below.

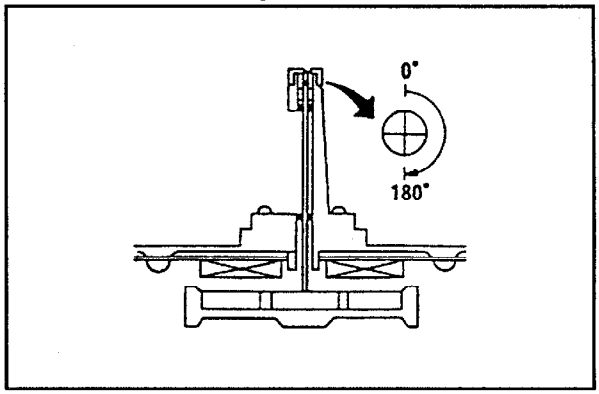


Figure R5

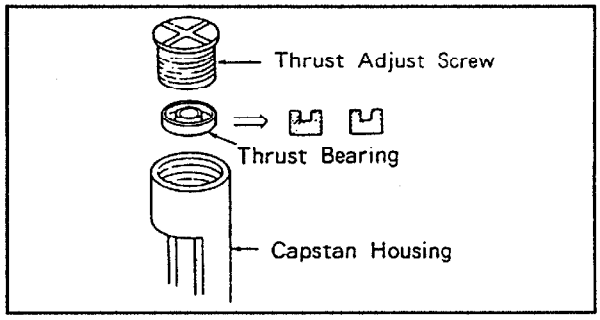


Figure R6

2-4-4. REPLACEMENT OF TENSION BAND

1. Remove the cassette compartment.
2. Remove retaining ring and take out the Rew Arm (A) Unit.
3. Remove retaining ring and washer on the soft breake lever S unit.
4. Remove retaining ring and a snap washer and take out the tension Band Unit.

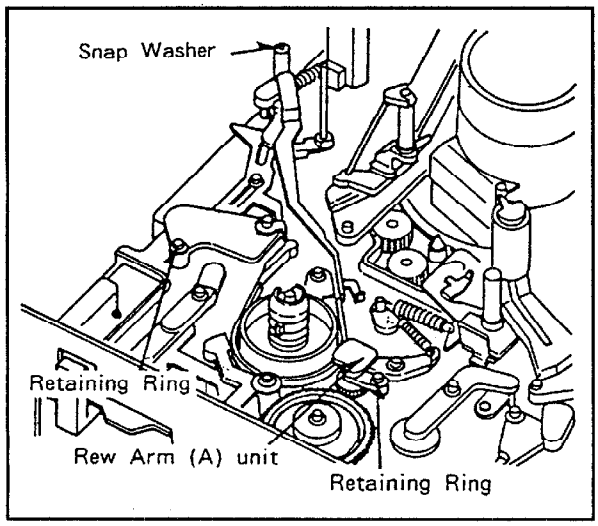


Figure R7

5. Remove screw and remove the tension band from the band release arm.
6. Remove retaining ring and remove tension band from tension arm unit.

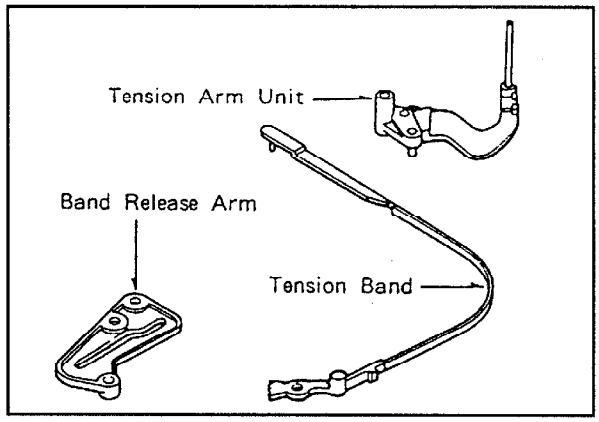
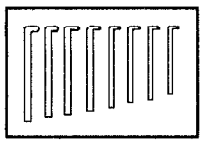
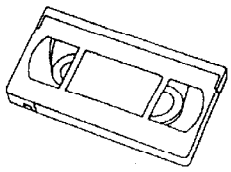
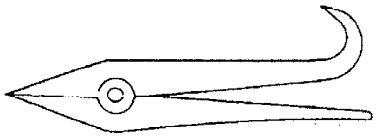
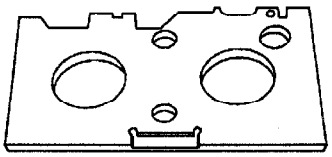
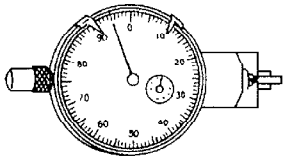
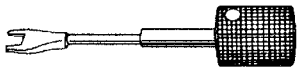
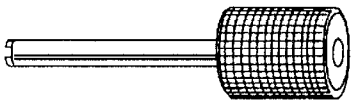
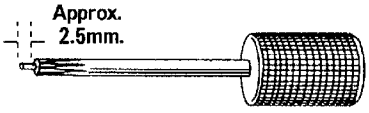
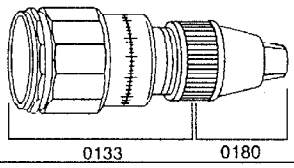
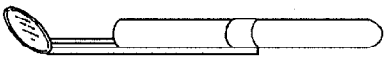
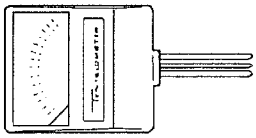
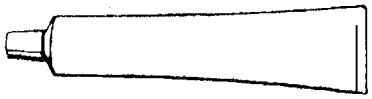
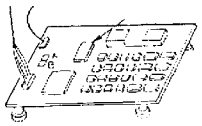


Figure R8

7. Replace the Tension Band by reversing the steps shown above.
8. After replacement, the Tension Post position and Back Tension Adjustment must be confirmed. (refer to step 6-3-13, 6-3-14)

2-5. MECHANICAL ADJUSTMENT PROCEDURES

2-5-1. SERVICING FIXTURES & TOOLS

VFK0326 ; Hex. Wrench Set (0.7, 0.9, 1.2, 1.5, 1.6, 2, 2.4, 3 mm) 	VFM8180HADH : VHS Alignment Tape 	VFK0335 ; Retaining Ring Remover (3mm/4mm) 
VFK0191 ; Post Adjustment Plate 	VFK0190 ; Reel Table Height Fixture 	VFK0328 ; H-Position Adj. Screwdriver 
VFK0329 ; Post Adj. Screwdriver 	VFK0157 ; Fine Adj. Screwdriver  Approx. 2.5mm. Grind the top portion approximately	VFK0133 ; Dial Torque Gauge VFK0134 ; Adaptor for VFK0133 VFK0180 ; Plastic Clamper Only  0133 0180
VFK0948 ; Check Light 	VFK0132 ; Back Tension Meter (Tentelometer, Made in U.S.A) 	VFK27 ; Head Cleaning Stick
MOR265 ; Morlytone Grease 	High Quality Machine Oil < Purchase Locally > (Reel Shaft, Capstan Shaft etc.) Cleaning Liquid (Freon, TF, Alchol) < Purchase Locally > (Tape Tronsport Rubber Parts etc.)	VFK0644 ; EVR Fixture *ROM IC VFK0701ROM32 

2-5-2. ADJUSTMENT FLOW CHART

In order to gain access to the items needing service this flow chart describes the order of steps for adjusting the tape guide posts and A/C head.

AFTER REINSTALLING THE P1 POST, OR IF THE P1 POST HAS BEEN TURNED EXCESSIVELY.

2-5-3. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHTS.

* **Note:** Adjust the tape guide post P1 only.

2-5-4. CONFIRMATION OF THE TAPE TRANSPORT.

2-5-7. CONFIRMATION OF THE ENVELOPE OUTPUT (LINEARITY).

AFTER REINSTALLING THE CYLINDER UNIT

2-5-7. CONFIRMATION OF THE ENVELOPE OUTPUT.

2-5-11. ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION (X-VALUE).

* **Note:** Do not change the height of the P1 and P4 posts and position of the A/C head.

AFTER REINSTALLING ALL POSTS OR IF ALL POSTS HAVE BEEN TURNED EXTREMELY.

2-5-3. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHT

2-5-4. CONFIRMATION OF THE TAPE TRANSPORT.

2-5-5. ADJUSTMENT OF THE PULL-OUT POST (P5 POST) HEIGHT.

2-5-6. CONFIRMATION OF THE A/C HEAD TILT.

2-5-7. CONFIRMATION OF THE ENVELOPE OUTPUT.

AFTER REINSTALLING THE A/C HEAD

2-5-6. CONFIRMATION OF THE A/C HEAD TILT.

* **Note:** Do not change the height of P4 post.

2-5-8. COARSE ADJUSTMENT OF THE A/C HEAD HEIGHT.

2-5-9. COARSE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION

2-5-10. ADJUSTMENT OF THE A/C HEAD AZIMUTH.

2-5-11. ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION (X-VALUE).

AFTER REINSTALLING THE P4 POST, OR IF THE P4 POST HAS BEEN TURNED EXCESSIVELY.

2-5-3. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHTS.

* **Note:** Adjust the P4 post only.

2-5-4. CONFIRMATION OF THE TAPE TRANSPORT.

* **Note:** Adjust the P4 post only.

2-5-6. CONFIRMATION OF THE A/C HEAD TILT.

2-5-7. CONFIRMATION OF THE ENVELOPE OUTPUT (LINEARITY).

AFTER REINSTALLING THE PULL-OUT POST (P5 POST)

2-5-5. ADJUSTMENT OF THE PULL-OUT POST (P5 POST).

* **Note:** Do not readjust any other post.

2-5-3. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHT (P1,P2,P3 AND P4)

* Equipment Required:
Post Adjustment Plate ..... VFK0191 or VFK1012
Reel Table Height Gauge VFK0190
Nut Driver (Purchase locally)
Post Adjustment Screwdriver VFK0329

1. Remove the cassette compartment from the mechanical chassis.
2. Place the Post Adjustment Plate over the reel tables. (Figure M1) Confirm that the Post Adjustment Plate is firmly seated.

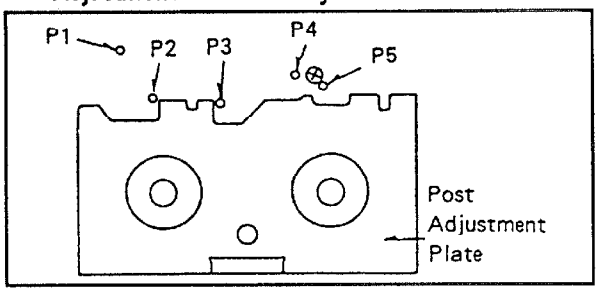


Figure M1

3. Lower all 4 tape guide posts so that the lower tape guide on each post is below the top surface of the adjustment plate.
Use the post Adjustment screwdriver to lower posts P2 and P3, and the Nut Driver to lower Posts P1, P4 and P5.
4. Place the Reel Table Height Gauge on the Post Adjustment Plate and lower the scraper so that it touches the plate (Figure M2).

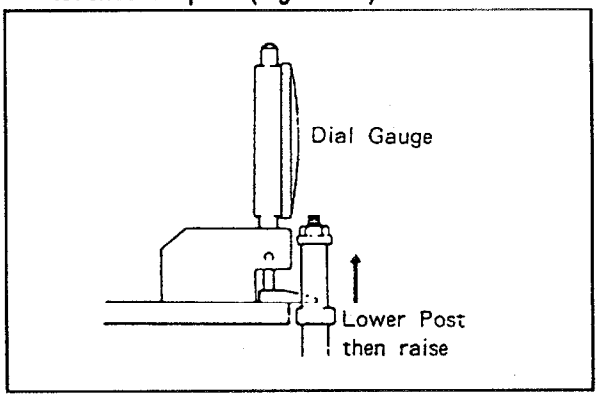


Figure M2

5. Place the side of the scraper against the each post as shown in Figure M3, set the gauge to zero, then slowly raise the post until the lower tape guide just touches the bottom of the scraper. Use the gauge to determine the exact point at which the lower tape guide touches the scraper. (Figure M3).

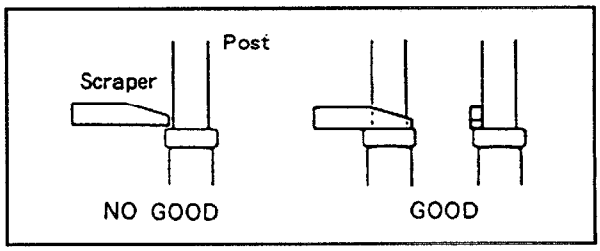


Figure M3

2-5-4. CONFIRMATION OF THE TAPE TRANSPORT (TAPE GUIDE POSTS)

Note:
1. The tape guide posts have been precisely adjusted at the factory. Therefore, normally do not change the height of P1, P4 and P5 posts. The following adjustment is required only when replacing the posts.
2. If curling is apparent proceed to the P4 post, wipe dirt from the pressure roller and capstan shaft using a soft cloth impregnated with Freon TF or cleaning liquid.
3. The adjustment of the post height is required only it one has been replaced.

* Equipment Required
Post Adjustment Screwdriver VFK0329
Check Light VFK0948
Nut Driver (Purchase locally)

1. To prevent the alignment tape from being damaged, use a normal cassette tape for this procedure.
Play back the normal cassette tape and confirm that the tape travels without any curling at the edges of all the posts by using the check light. (Figure M4 and Figure M5).

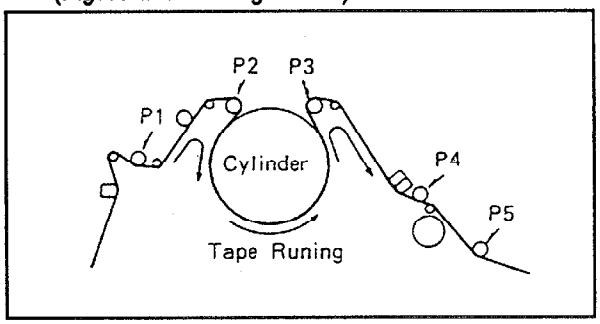


Figure M4

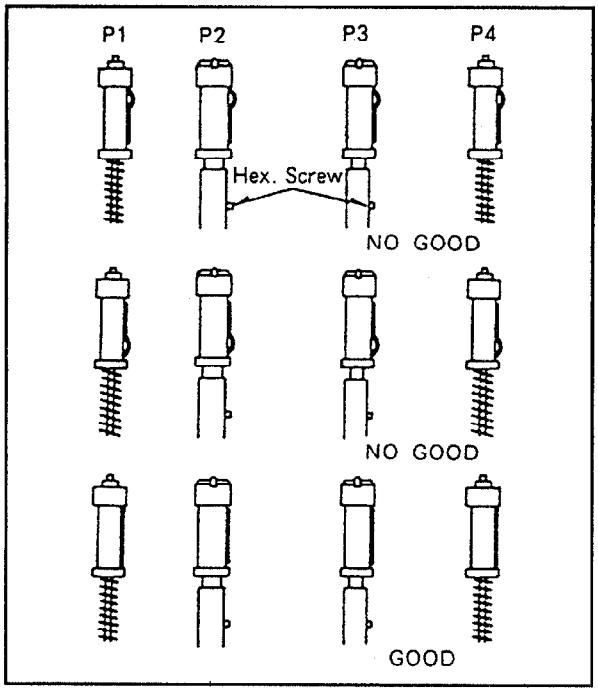


Figure M5

2. If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver (posts P2 and P3) or the nut-driver (Posts P1 and P4)(Figure M4 and M5).
3. After adjusting the P4 post, adjustment of the pull-out post (P5) is required. (Refer to "ADJUSTMENT OF THE PULL-OUT POST HEIGHT".)
4. If the tape curling cannot be corrected by adjusting the tape guide posts, then adjustment of the A/C head tilt may be needed.

2-5-5. ADJUSTMENT OF THE PULL OUT POST (P5 POST) HEIGHT

Note: 1. This adjustment should be performed only after adjusting tape guide post P4 as the height of the pull-out post is based on the height of post P4.

* Tools and Equipment Required:
Post Adjustment Plate ..... VFK0191 or VFK1012
Reel Table Height Gauge VFK0190
Check Light VFK0948
Nut Driver (Purchase locally)

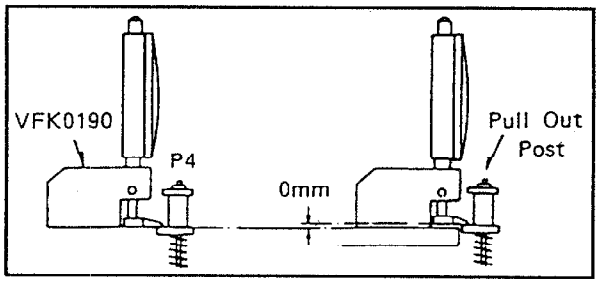


Figure M6

1. Remove the cassette compartment by removing 4 screws.
2. Place the Post Adjustment plate over the reel tables.
3. Place the Reel Table Height Gauge on the tape guide post P4, lower the scraper so that it touches the lower edges of P4, then set the gauge to zero ("0")(Figure M6).
4. Slightly lower the pull-out post by turning the nut on the post clockwise with the nut driver, and set the side of the scraper against the post as shown in Figure M7.
5. Slowly turn the nut on the post counterclockwise until the gauge reads 0mm (Figure M6).
6. Confirm there is no tape curling at P4 post during reverse mode by using the check light. If tape curling occurs, Go back to step 3.

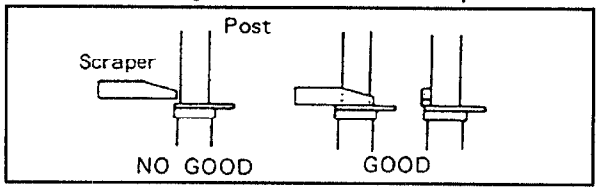


Figure M7

2-5-6. CONFIRMATION OF THE A/C HEAD TILT

Note: This procedure should be performed after replacing the A/C head and pressure roller, and adjusting the height of the tape guide post (P4). (Refer to "COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHT").

* Tools and equipment Required:
Hex. Wrench Set VFK0326
Nut Driver (purchase locally)

1. Play back the beginning portion of T180 (NTSC) / E240 (PAL) blank cassette tape and confirm that the tape runs between lower and upper limiters of the P4 post. If there is waving or filling in the lower edge or top edge of the tape, correct the tilt of the A/C head by turning the screw located behind the A/C head (Figure M8).

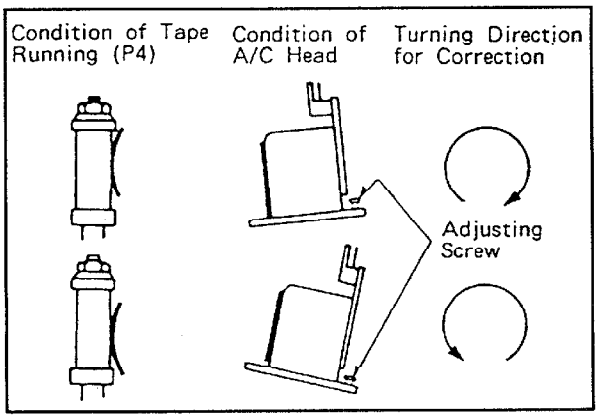


Figure M8

2. If the tape curling cannot be removed by adjusting the A/C head tilt, then readjustment of the height of the tape guide post (P4) may be needed.

Note:
1. The tape guide post (P4) has been precisely adjusted at the factory. Therefore, normally the tape guide post (P4) readjustment is not required to eliminate the tape curling.
2. After adjusting the A/C head tilt, the A/C head height adjustment is required.

2-5-7. CONFIRMATION OF THE ENVELOPE OUTPUT (LINEARITY)

Note: Before playing back the alignment tape, play back a normal cassette tape and confirm correct transport. (Refer to "CONFIRMATION OF THE TAPE TRANSPORT".)

* Tools and Equipment Required:
Post Adjustment Screwdriver VFK0329
Alignment Tape VFM8180HADH

1. Connect the scope to the output of the Head Amp (CL3003) on the MAIN C.B.A. and TP6201 on the same C.B.A. to External trigger of the scope.
2. Play back the monoscope portion of the alignment tape.
3. Press the Tracking Control buttons and adjust for maximum RF envelope.
4. If the RF envelope appears like example "A" or "B" in Figure M9, then adjustment of tape guide post (P2: Entrance) is necessary.
5. Adjust the tape guide post (P2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown "C" in Figure M9. (See Figure M12 also).

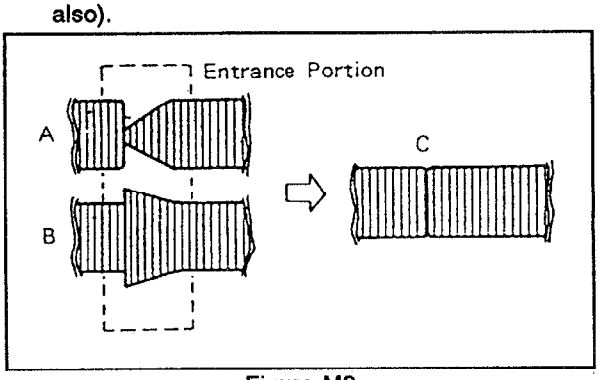


Figure M9

6. If the RF envelope appears like example "D" or "E" in Figure M10, then adjustment of the tape guide post (P3: Exit) is necessary.
7. Adjust the tape guide post (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in "F" in Figure M10.

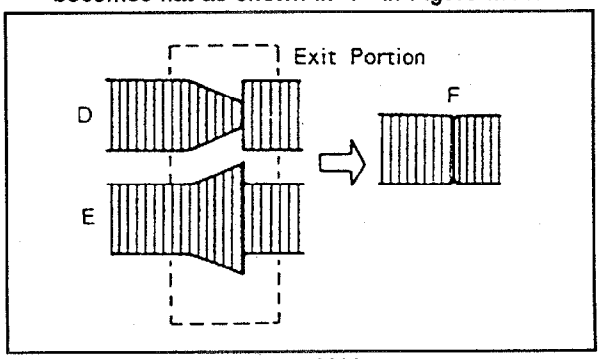


Figure M10

8. Set the Tracking Control buttons from one end postion to another end.
The variation of RF envelope should be nearly parallel as shown in Figure M11.
9. Press the Tracking buttons and adjust for maximum RF envelope.
If the RF envelope does not meet these specs, V1/V 0.7, V2/V 0.8, then repeat steps 1-9 of item 3-2-5. again (Figure M13).

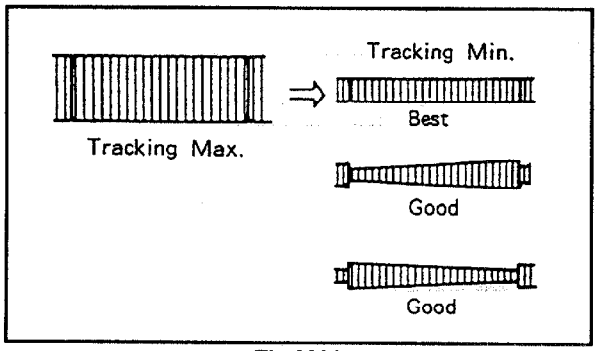


Fig M11

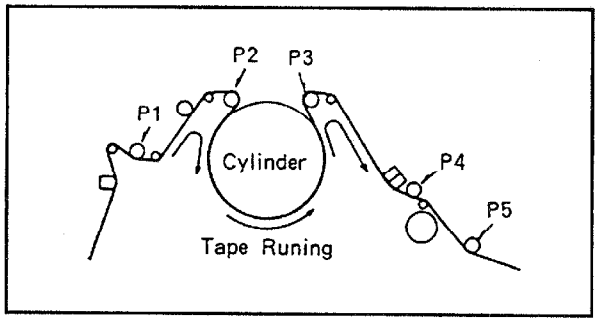


Figure M12

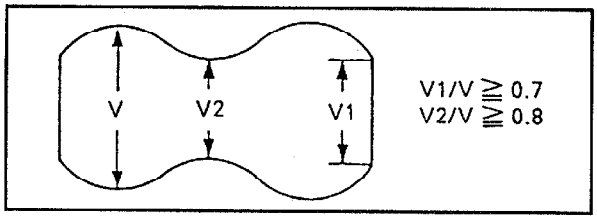


Figure M13

10. Set the Tracking buttons form one end to another end again, then set back to the Fix position by pressing both tracking buttons simultaneously or switching the power off and on again.
    At the Fix position, the RF envelope waveform should be at maximum. If it is not at maximum then "ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION" is necessary. (Refer to "FINE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION".)

2-5-8. COARSE ADJUSTMENT OF THE A/C HEAD HEIGHT

Note: This procedure should be performed only when the A/C Head is replaced.

* Tools and Equipment Required:
Check Light VFK0948
Nut Driver (Purchase locally)

1. Looking at the lower edge of the control head within the tape running, ensure that lower edge of the tape runs along 0.25mm in from the lower edge of the control head. If it doesn't slightly turn the nut (A) in either direction to correct clockwise to lower the head and counterclockwise to raise it.

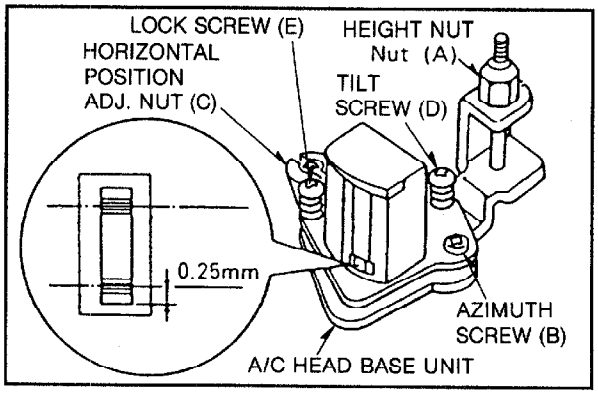


Figure M14

2-5-9. COARSE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION

Note: This procedure should be performed only when the A/C head is replaced.

1. Connect the scope CH1 to output of the Head Amp (CL3003) on the Main C.B.A. and CH2 to audio output.
2. Play back the alignment tape [the portion for the A/C head horizontal adjustment (coarse)].
3. Set the tracking control buttons to Fix position by pressing both tracking buttons simultaneously.
4. Adjust the adjustment nut (C) so that the phase of audio drop-out and RF video drop-out becomes as close as possible.
5. Adjust the adjustment nut (C) so that the center of RF envelope level becomes maximum.
6. Confirm the phase of RF video drop-out and audio drop-out should be less than 15 msec.

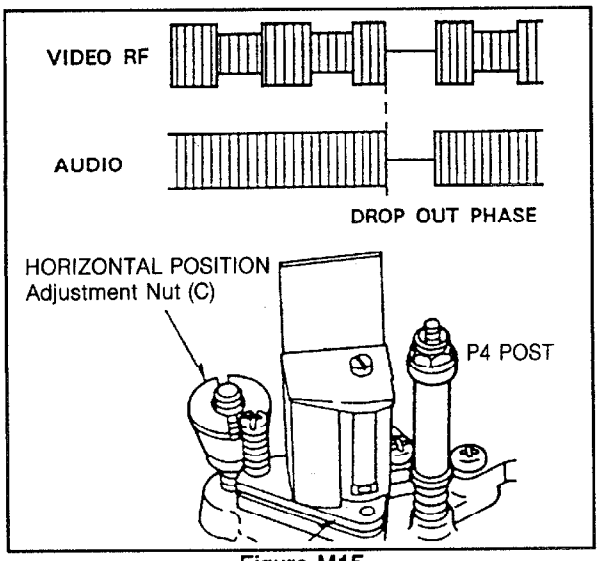


Figure M15

2-5-10. ADJUSTMENT OF THE A/C HEAD TILT AND AZIMUTH

Note: This procedure should be performed only when the A/C Head is replaced and posts height are readjusted.

* Tools and Equipment Required:
Nut Driver (Purchase locally)
Alignment Tape VFM8180HADH

1. Connect the scope to the audio output.
2. Play back the alignment tape (2nd portion (Normal Audio 6KHz)).
3. Adjust the screw (B) so that the audio output level becoms maximum. (FigureM16)
4. Then adjust the net (A) so that the audio output level maximum.

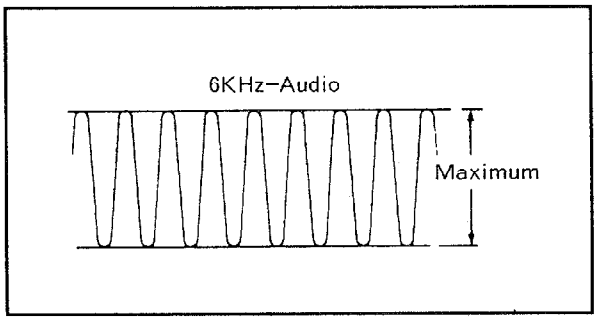


Figure M16

2-5-11. ADJUSTMENT OF A/C HEAD HORIZONTAL POSITION

Note: This procedure should be performed only when the A/C head is replaced and after performing the tape interchangeability adjustment.

* Tools and Equipment Required:
H. Position Adj. Fixture VFK0328
Alignment Tape VFM8180HADH

1. Set the Tracking Control buttons to Fix position.
2. Connect the scope CH1 to TP3001 on the Main C.B.A., and TP4001 on the Audio C.B.A. to Ext trigger the scope.
3. Play back the Monoscope pattern of the alignment tape.
4. Adjust the adjustment nut so that the RF envelope output level becomes is maximized at the Fix position (Figure M17).
5. Set the Tracking buttons from one end position to another end then back to Fix position by pressing both tracking buttons simultaneously. Confirm that the RF envelope output level is maximized at the Fixed position (Figure M18).

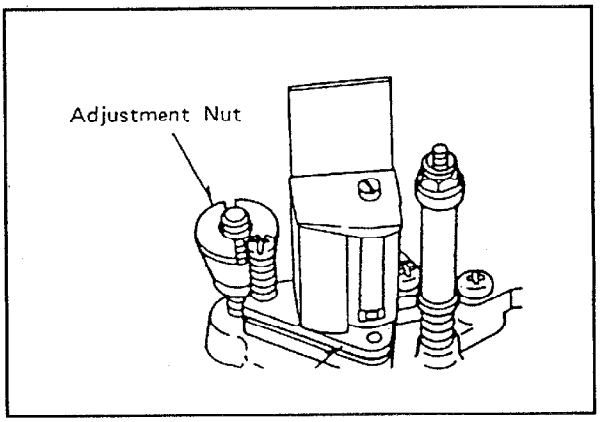


Figure M17

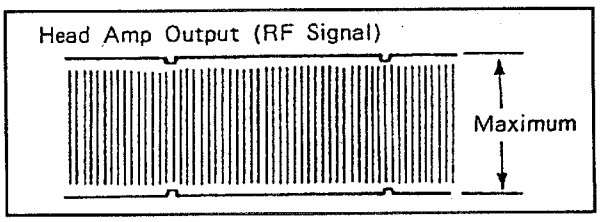


Figure M18

2-5-12. CONFIRMATION OF BRAKE TORQUE

* Equipment Required:
  Dial Torque Gauge VFK0133
  Adaptor for Gauge VFK0134
* Specification: ----- See spec table (Figure M19)

1. Remove the cassette compartment by unscrewing 4 screws.
2. Attach the adaptor to the torque gauge and place the unit in STOP mode.
3. Place the torque gause on the reel table. The weight of gauge should not rest on the reel table.

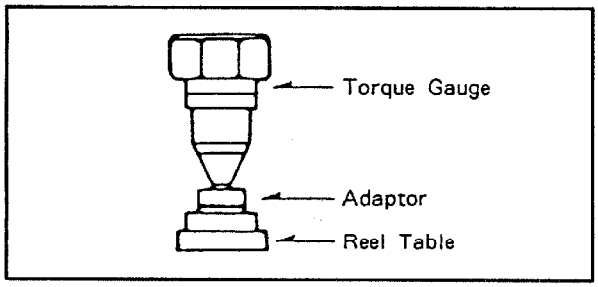
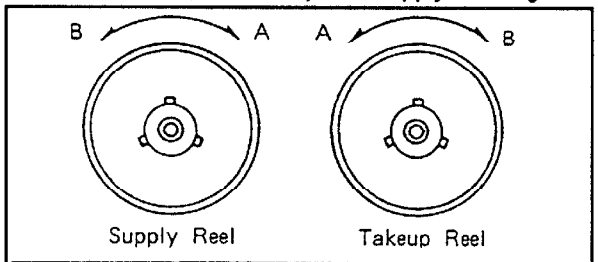


Figure M19

4. Turn torque gauge in either direction indicated in the Figure M19, and read the gauge when the brake begins slipping.

Note: If proper brake torque can not be obtained, check both take-up and supply clutch gear.



	A	B
Takeup	28+-8g-cm	28+-8g-cm
Supply	28+-8g-cm	28+-8g-cm.

Figure M20

2-5-13. TENSION POST POSITION ADJUSTMENT

* Specification: ----- 2.4mm ~ 2.9mm

1. Remove the Cassette Up unit by removing 4 screws. (Refer to the disassembly procedures titled in Removal of the Cassette Up Unit). Place the unit in Play mode by rotating Drive Gear (A) clockwise as shown below.

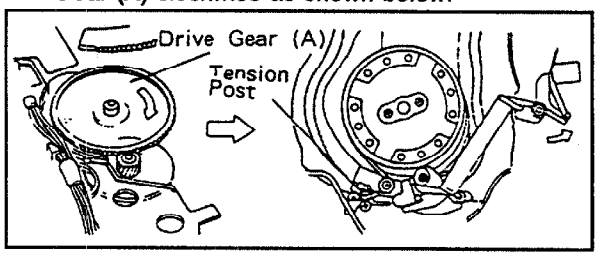


Figure M21

Note: In this case, make sure that the power is not applied.

2. Loosen the screw (A) a little bit and adjust the Tension Post adjustment plate so that the "Distance (A)" shown below becomes just meets the specification (2.4mm ~ 2.9mm).
3. Tighten the screw (A) to set it.

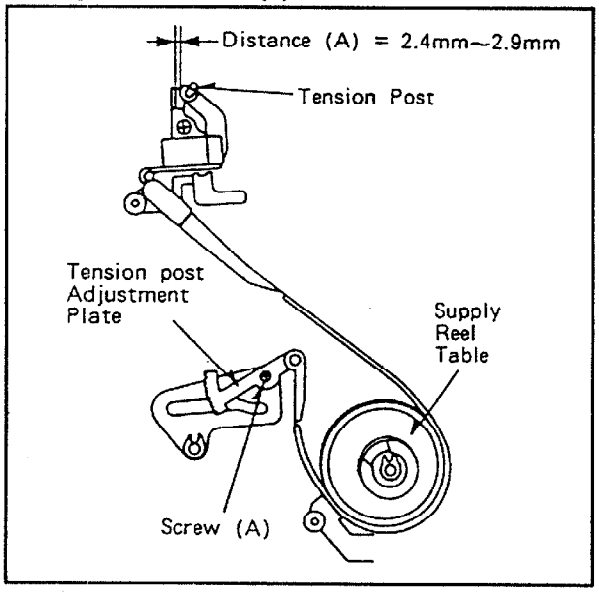


Figure M22

2-5-14. BACK TENSION ADJUSTMENT

* Equipment Required:
  Back Tension Meter VFK0132
  VHS Cassette Tape (120min)
* Specification: ----- 19~23g

1. Play back the cassette tape from the beginning and wait until the tape movement becomes stable. (for approx. 1-~20 seconds) is stabilized.
2. Insert the Back Tension Meter into the path of a tape, and measure if the back tension is within specification as shown in Figure M23.

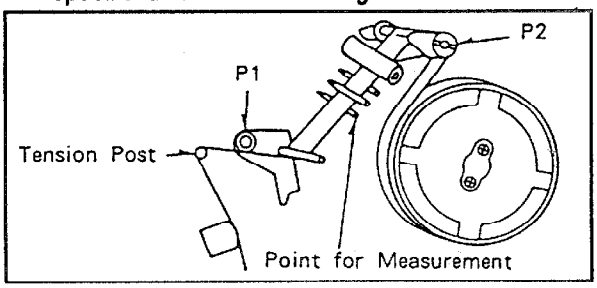


Figure M23

Note:
1. While measuring, make sure that the three probes of the meter are all in good contact with the tape.
2. As the tension meter is very sensitive, we recommend taking 3 separate readings.
3. If it is out of specification, change the spring notch as shown in Figure M24.

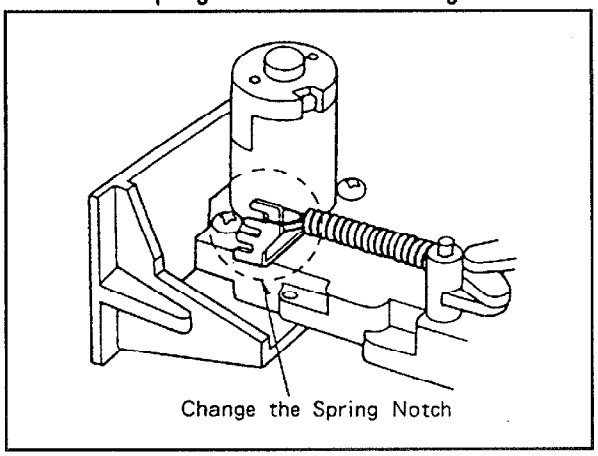


Figure M24

2-5-15. REEL TABLES HEIGHT ADJUSTMENT

* Equipment Required:
  Post Adjustment Plate ..... VFK0191 or VFK1012
  Reel Table Height Gauge VFK0190
* Specification ----- 0~0.15mm

Note: Cut-out on Post Adjustment Plate is reference of reel table height and their height is measured based on this reference.

1. Place the post adjustment plate on the reels, and put the Gauge on the plate. Set the gauge to zero "0" with the foot scraper of the gauge touching the cut-out portion of the plate.

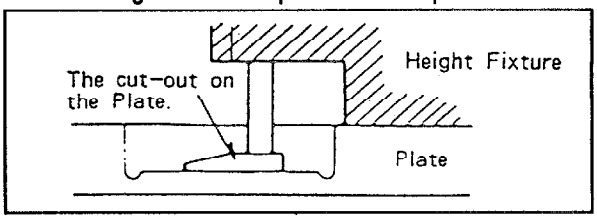


Figure M25

2. Then measure the height of reel table and confirm the difference performed in step 1 as shown below. Do the same for the other reel table.

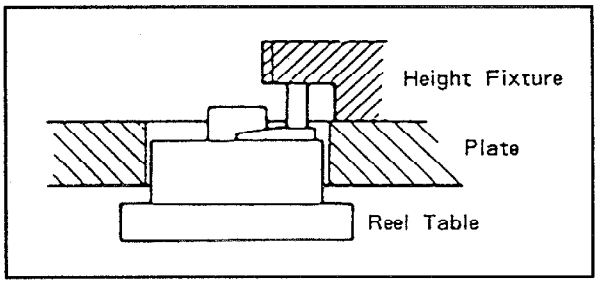


Figure M26

3. If a height difference in readings between the cut-out portion of plate and reel tables is not 0~-0.15mm (height or lower), adjust the height of the reel to obtain specified height.
4. For adjustment add or take out a washer.

2-5-16. ADJUSTMENT OF CAPSTAN FG HEAD GAP

* Specification ----- 0.17~0.18mm

1. Slightly loosen the 2 screws.
2. Put the paper which is used for cover page of this volume into the gap between F.G.Head and Capstan rotor.(The thickness of the cover page is approx 0.17mm).
3. After adjustment, tighten 2 screws.

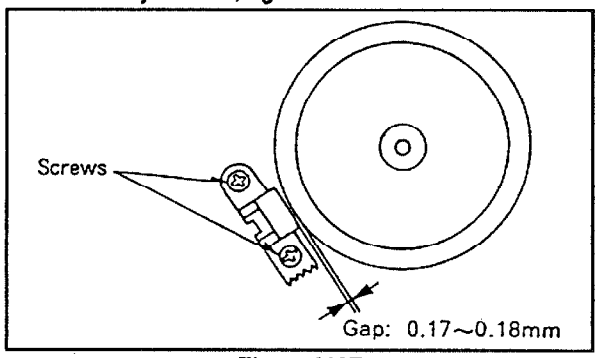


Figure M27

Note: Do not touch the surface of rotor and keep any magnetic material away.

2-5-17. TAKE UP IMPEDANCE ROLLER POSTION ADJUSTMENT

1. Loose screw (A) a little bit.
2. Push the Impedance roller to arrow direction and conform the project(A) touched to the V stopper base(B) then tighten the screw(A).

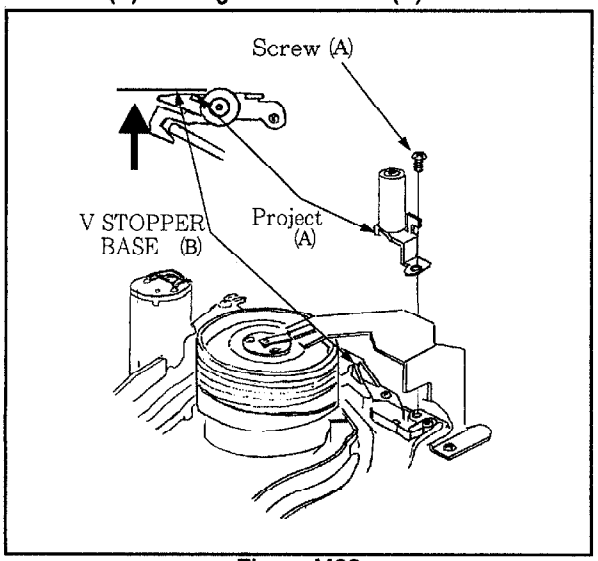


Figure M28

2-6. ASSEMBLY ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch.
Therefore the relationship between the mode select switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on.
If these parts are fixed in properly, the unit will be unloaded or compulsorily stopped.
And it will result being damage to any mechanical or electrical parts.

2-6-1. PROCEDURES FOR ASSEMBLING LOADING RING AND LOADING GEARS

1. Insert a ring guide sleeve onto the 3 shaft on the chassis.
2. Insert Loading Ring T (1) unit and a Loading Gear (B) with cut washer so that both triangle marks line up as shown below.

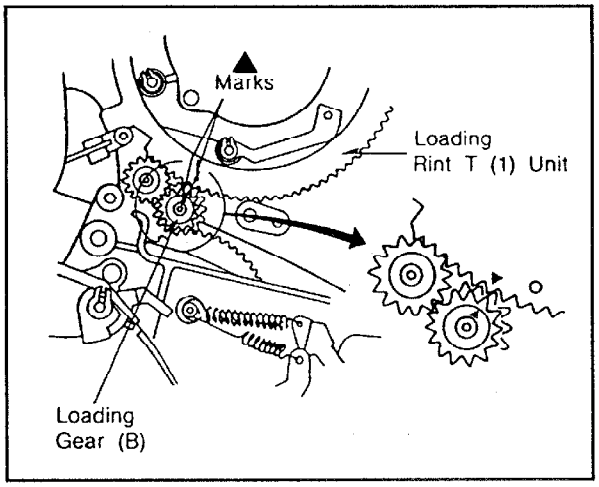


Figure M29

3. Insert loading guide roller onto 3 shaft.
4. Install a Loading Gear (A) with cut washer and next set a Loading Ring S (1) Unit so that the holes of Loading Ring S (1) Unit and T (1) Unit line on as shown below.
5. Install pressure spring inserted between loading ring S (1) unit and T (1) unit then set both loading ring units with washers and retaining rings.

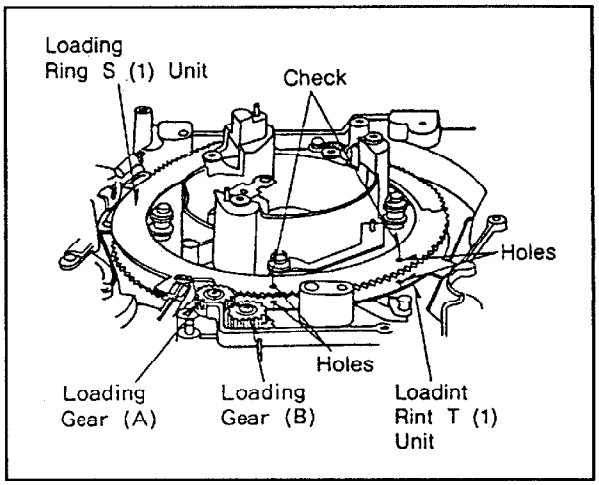


Figure M30

Note: Pay attention that the washers are remaining under the loading gears or any other parts.

2-6-2. PROCEDURES FOR ASSEMBLING TAKE-UP LOADING GUIDE AND TAKE-UP LOADING POST UNIT

1. Install Loading Guide T unit then tighten 3 screws.
   The small projection of a Loading Ling T unit must be inserted into gap of Loading Guide T unit.

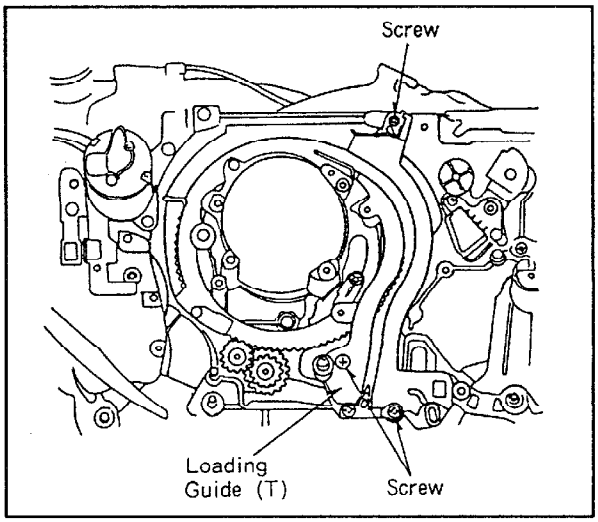


Figure M31

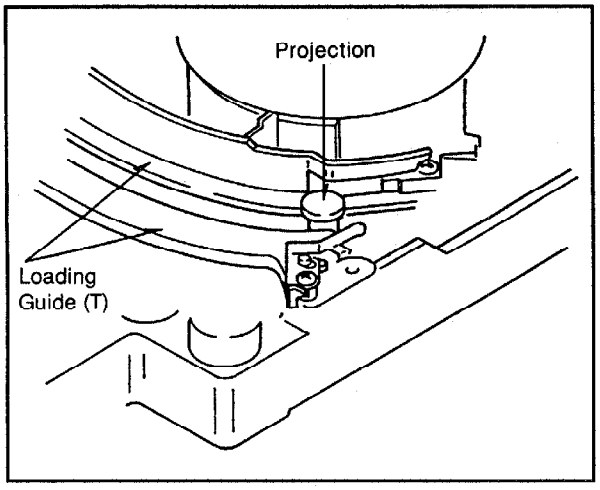


Figure M32

2. Fix a Take-up Side Loading Post unit holding the Small projection of the Loading Ling T unit and install at shaft Holder Unit.
3. Install the take up shaft holder angle and tighten a screw.

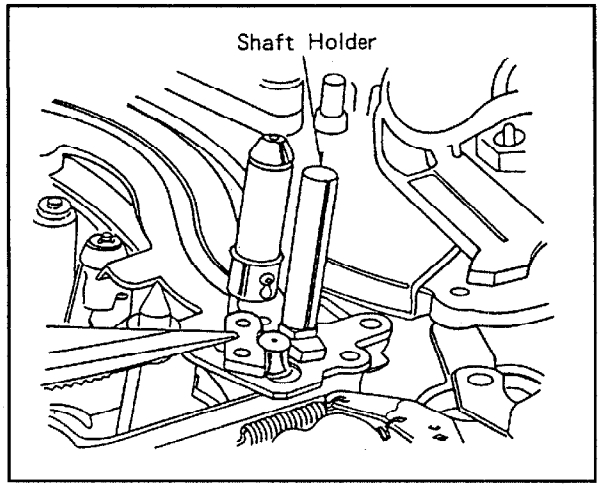


Figure M33

2-6-3. PROCEDURES FOR ASSEMBLING SUPPLY LOADING GUIDES AND SUPPLY LOADING POST UNIT

1. Install the Loading Guide S-1 and S-2. Then tighten 4 screws.

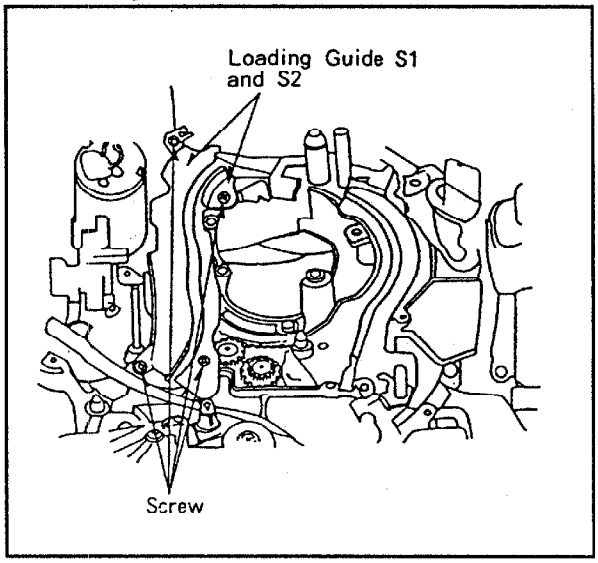


Figure M34

2. Slide a Supply Loading Post Unit into the gap between the Loading Guide S1 and S2 hooking the connection Rod to the connection Tie Unit as shown below.

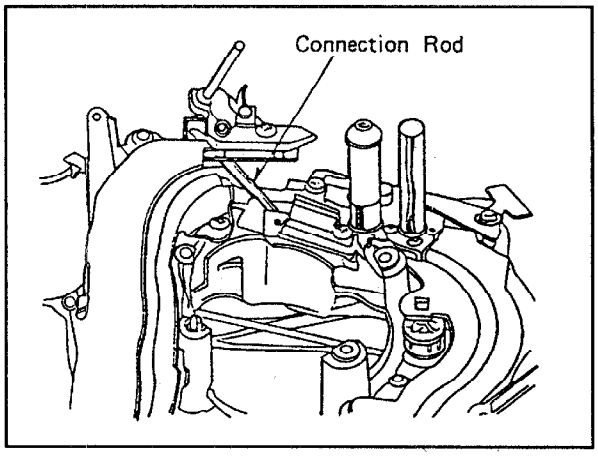


Figure M35

3. Install a V stopper Base and Supply Post Stopper.

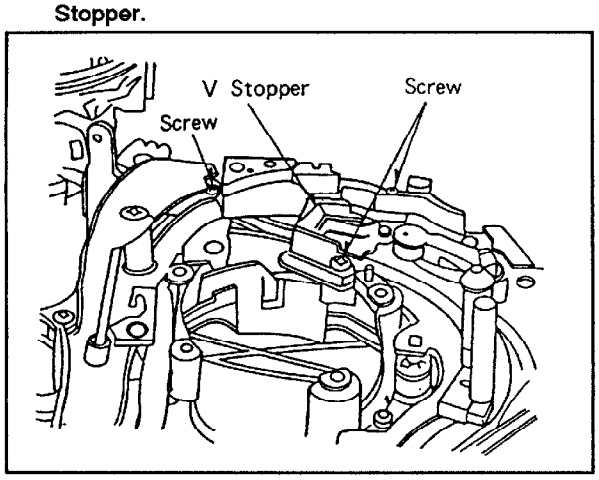


Figure M36

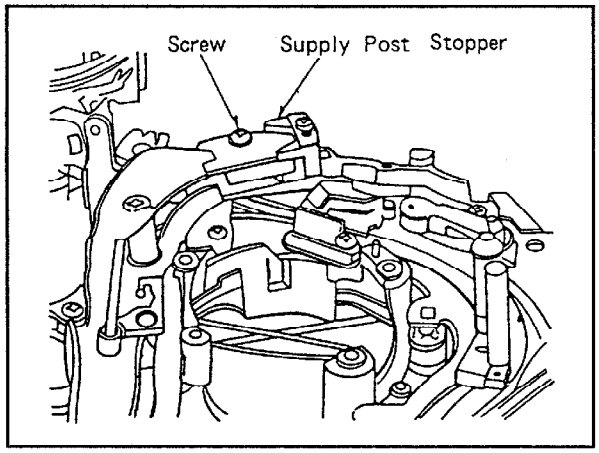


Figure M37

4. Set the Loading Post unit into Stop position as shown below.

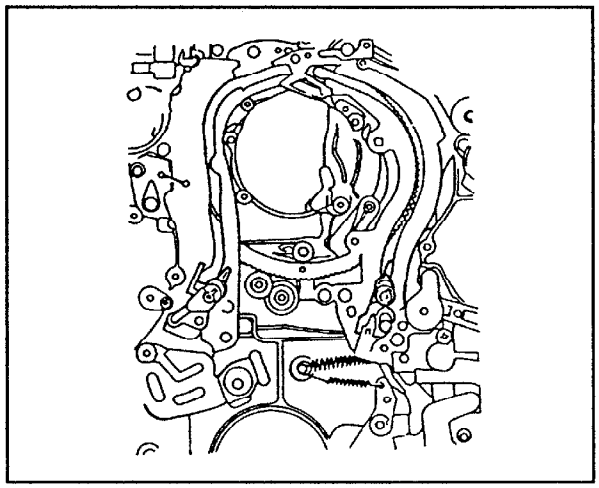


Figure M38

2-6-4. PROCEDURES FOR ASSEMBLING MAIN ROD

1. Place the Main Rod inserting 3 Thrust Washers and then insert 3 washers.
After that, set them using 2 retaining rings as shown below.

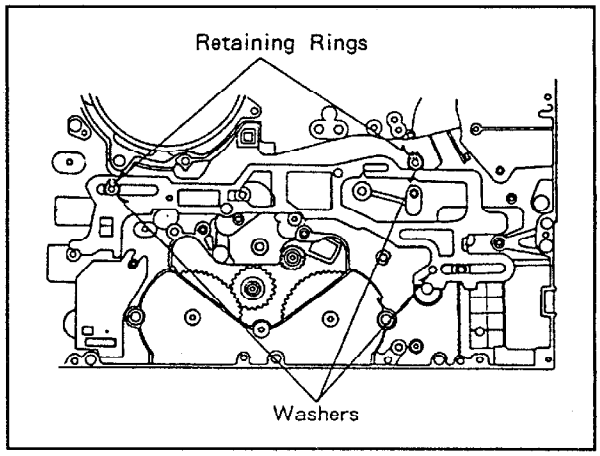


Figure M39

2. Install the Drive Arm kick Lever hooking the Drive Arm Kick Lever Spring and set it using a retainings.

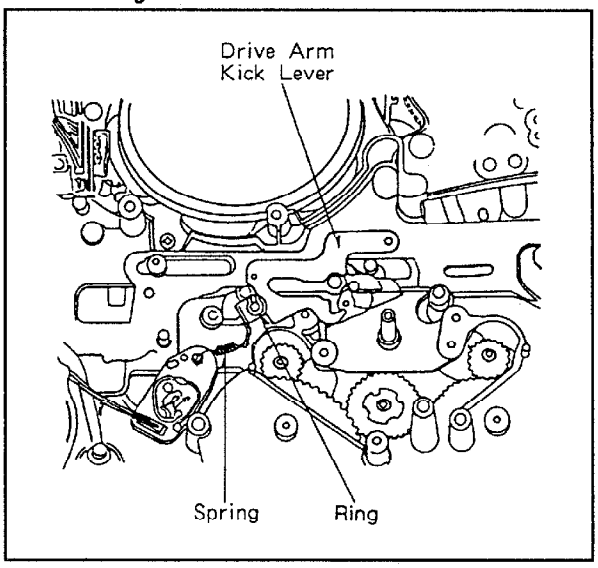


Figure M40

2-6-5. PROCEDURES FOR ASSEMBLING CAM GEAR AND LOADING GEAR (C)

1. Make sure that the hole on the Main Rod Lines up exactly with hole on chassis as shown below. Also, make sure the hole on the Cam Gear Lines up with the holes on the chassis.

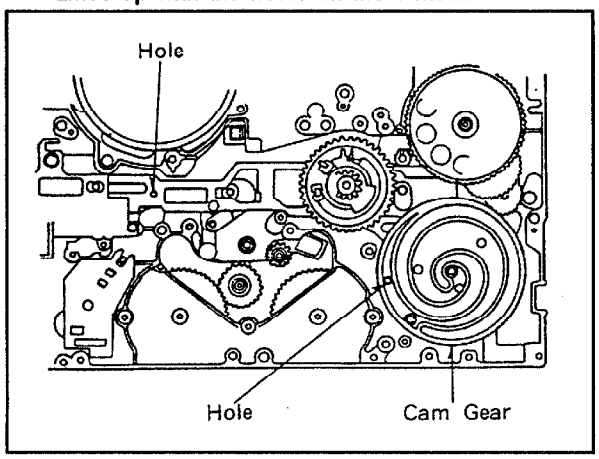


Figure M41

2. Install the Loading Gear (C) keeping the relationship as shown below.

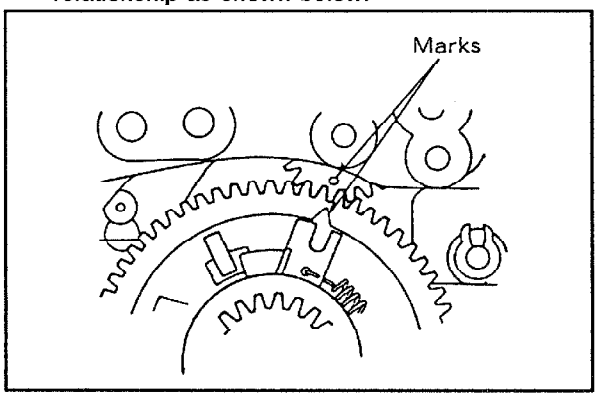


Figure M42

3. Install a Sector Gear as shown below.

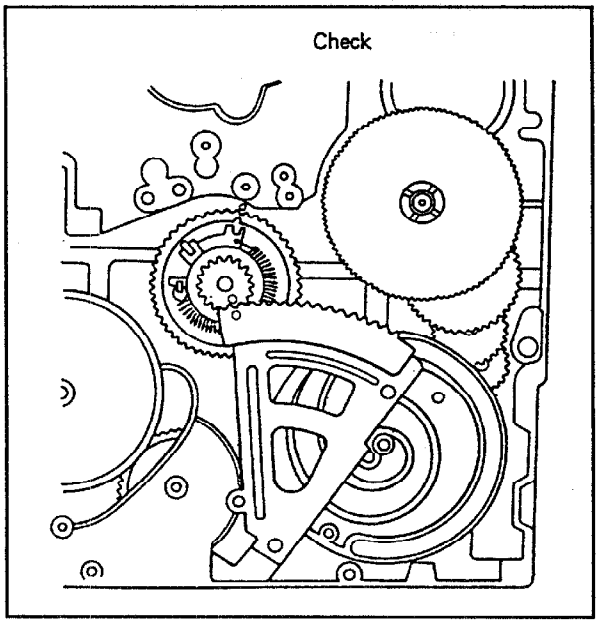


Figure M43

4. Set the SG Limiter.

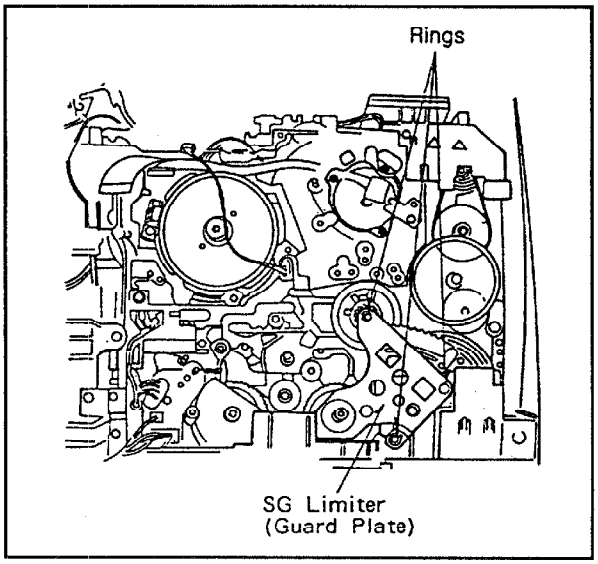


Figure M44

5. Install the belt and the belt cover.

2-6-6. ASSEMBLY PROCEDURES OF MODE SELECT SWITCH

1. Perform this procedure after confirming the complete setting of mechanical parts. First of all, confirm that the hole on a Main Rod is meeting with the hole on the chassis.
2. Position the moving contact of the mode select switch to the position as shown below.

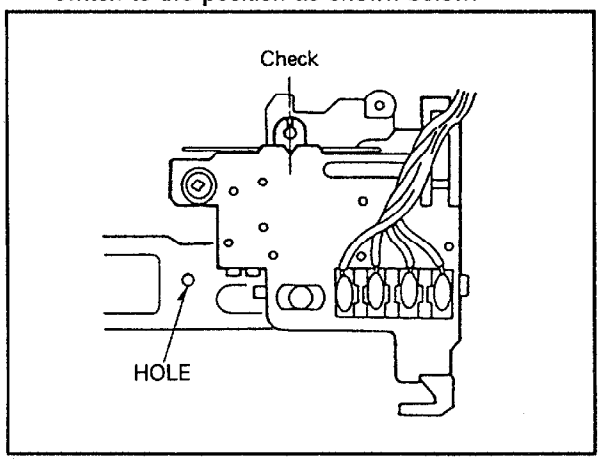


Figure M45

3. Install the Mode Select Switch Keeping these relationship written in item (1) and (2) by adjusting 2 screw.

2-7. ELECTRICAL ADJUSTMENT PROCEDURES

2-7-1. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMENT AND TOOLS

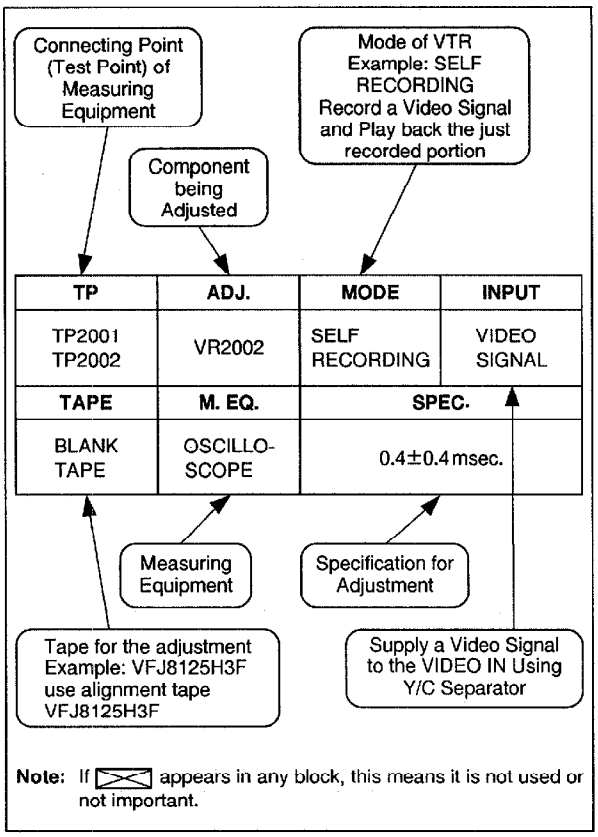
The following equipment is required for adjustment of the VTR section of VHS-Movie.

1. VTVM (Vacuum Tube Volt Meter)
   DVM (Digital Volt Meter)
   Voltage Range: 0.01—50V)
2. Dual Trace Oscilloscope
   Voltage Range: 0.06—50V/div
   Frequency Range: 0—50MHz
   Probe: 10 : 1 or 1 : 1
3. Frequency counter
   Frequency Range: 0—10MHz
4. Signal Generator (Sinewave)
   Frequency Range: 0—10MHz
5. Video Sweep Generator
   Frequency Range: 0—10MHz
6. Colour Monitor TV
7. Plastic Tip Driver
8. VHS-Movie. Alignment Tape (VFM8080HQFP)
9. S-VHS-Movie. Blank Tape
10. Pattern Generator
11. Vectorscope
12. DC Power Supply

PREPARATION

1. Remove the casing panels.
   (Refer to the disassembly method)
2. Connect the extension cable if necessary.
   VFK0823

HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Mode of VTR Example: SELF RECORDING Record a Video Signal and Play back the just recorded portion
Component being Adjusted
TP
ADJ.
MODE
INPUT
TP2001 TP2002
VR2002
SELF RECORDING
VIDEO SIGNAL
TAPE
M. EQ.
SPEC.
BLANK TAPE
OSCILLO-SCOPE
0.4±0.4 msec.
Measuring Equipment
Specification for Adjustment
Tape for the adjustment Example: VFJ8125H3F use alignment tape VFJ8125H3F
Supply a Video Signal to the VIDEO IN Using Y/C Separator
Note: If ⊠ appears in any block, this means it is not used or not important.

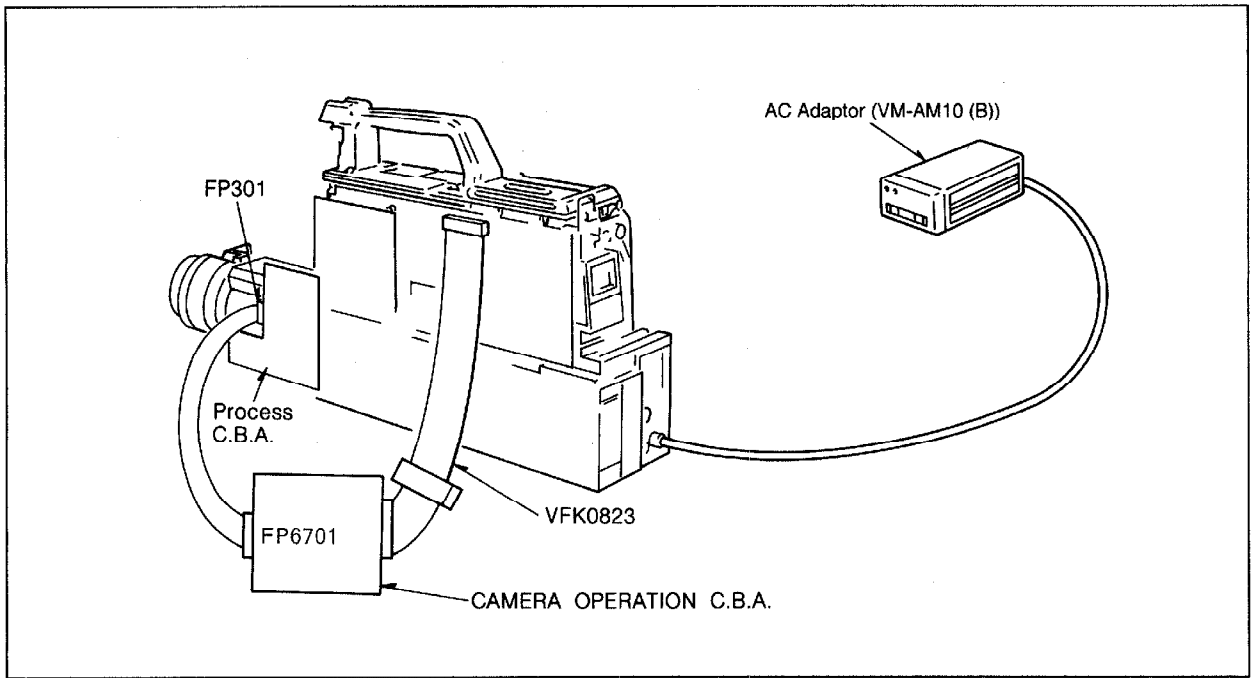


Fig. V1

TRIGGERING THE OSCILLOSCOPE

To trigger the Oscilloscope, the following test point is used.

H. rate: TP (video output)
V. rate: CKJ6 (Head Switch signal)
(B6001(6))

POWER SECTION

1. REG. 5V ADJUSTMENT

Purpose:
To properly calibrate the 5V voltage to 4.85 DC+−0.025V.

Symptom of Misadjustment:
All circuits in the unit will not operate properly.

TP	ADJ.	MODE	INPUT
TL1001 (HOT) TL1006 (GND)	VR1001	S-VHS CAMERA RECORDING (EIS ON)	
TAPE	**M. EQ.**	**SPEC.**	
S-VHS BLANK TAPE	D.V.M.	4.85+−0.025V	

Note:
Sensor, process, and camera operation C.B.A. are connect to the main C.B.A.

(1) Connect the D.V.M. to TL1001 (HOT) and TL1006 (GND) Adjust the VR1001 so that D.V.M. is 4.85+−0.025V.

2. CAMERA 3.5V ADJUSTMENT

Purpose:
To properly calibrate the voltage the 3.53V DC+−0.025V.

Symptom of Misadjustment:
All circuits in N Unit will not operate properly.

TP	ADJ.	MODE	INPUT
TL1002 (HOT) TL1006 (GND)	VR1002	S-VHS CAMERA RECORDING (EIS ON)	
TAPE	**M. EQ.**	**SPEC.**	
S-VHS BLANK TAPE	D.V.M.	3.53+−0.025V	

Note:
Sensor, process, and camera operation C.B.A. are connect to the main C.B.A.
Turn the power sw on and then set EIS system to the ON position.

(1) Connect the D.V.M. to the TL1002 (HOT) and TL1006 (GND) Adjust the VR1002 so that D.V.M. is 3.53+−0.025V.

3. CAMERA 9V REGULATOR

TP	ADJ.	MODE	INPUT
TL1003 (HOT) TL1006 (GND)	VR1003	S-VHS CAMERA RECORDING (EIS ON)	
TAPE	**M. EQ.**	**SPEC.**	
S-VHS BLANK TAPE	D.V.M.	8.70+0.05V −0.05V	

Note:
Digital Zoom must be set to the ON position.

(1) Connect the D.V.M. to TL1003 (HOT) and TL1006 (GND) Adjust the VR1003 so that D.V.M. is 8.70+−0.05V.

SERVO SECTION

4. PG SHIFTER ADJUSTMENT

Purpose:
Determine the Head Switching point during play-back.

Symptom of Misadjustment:
May cause Head Switching Noise and/or Vertical jitter in the picture.

TP	ADJ.	MODE	INPUT
R6001 ⑥ (CKJ6) VIDEO OUT	VR6201	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
ALIGNMENT TAPE VFM8080HQFP PORTION 2	OSCILLO- SCOPE	7.5H±0.5H	

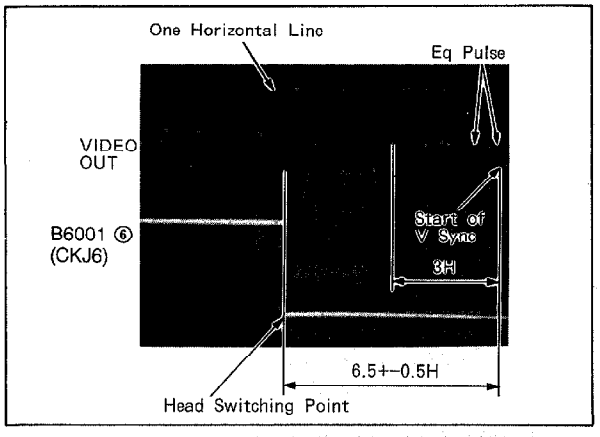


Fig. V2

LUMINANCE & CHROMINANCE SECTION

5. S-VHS MODULATOR LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL3003	VR3004	S-VHS STOP	COLOUR BAR B6001 ⑩ (CKJ ⑩)
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	0.34+−0.01Vp-p	

1. Connect the jumper wire between TEST MODE PIN 7 and PIN 11.
2. Supply Colour Bar signal to TEST MODE PIN 10 through 100uF capacitor.
3. Connect the oscilloscope to TL3003.
4. Adjust the VR3004 so that signal level is 0.34+−0.01Vp-p.

6. RECORDING CURRENT ADJUSTMENT
REC CHROMA LEVEL ADJUSTMENT

Purpose:
Set the optimum Record Chroma Level.

Symptom of Misadjustment:
If the Record Chroma Level is too high, Beats may be seen in the picture. If the Level is too low, Picture will be Black and White.

TP	ADJ.	MODE	INPUT
TL5002 (HOT) TL5001 (GND)	VR8001	S-VHS REC	DARK PICTURE
TAPE	**M. EQ.**	**SPEC.**	
VHS BLANK TAPE	OSCILLO-SCOPE	32+−2mVp-p	

Note 1:
Cover the Lens with black cap.

Note 2:
Minimize the luminance recording current by turning VR3001 before this adjustment.

1. Connect the oscilloscope to TL5002 (HOT) and TL5001 (GND).
2. Make recording with SP mode.
3. Eliminate luminance signal by turning off.
4. Adjust the VR8001 so that chroma level is 32+−2mVp-p.

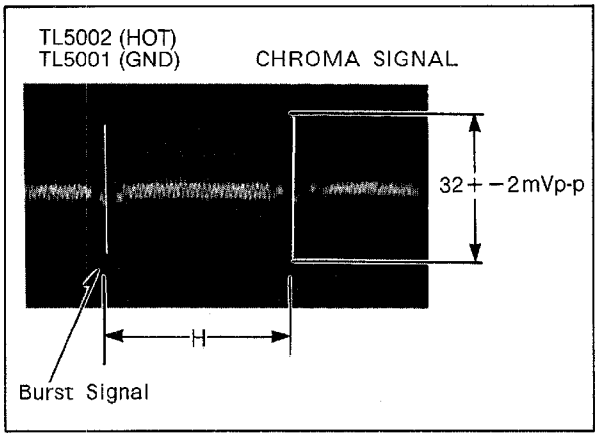


Fig. V3

7. LUMINANCE RECORDING CURRENT ADJUSTMENT

Purpose:
Set the optimum Recording Luminance Level.

Symptom of Misadjustment:
If the Record Luminance Level is too high video may overload.
If the Level is too low, the S/N Ratio deteriorates.

TP	ADJ.	MODE	INPUT
TL5002 (HOT) TL5001 (GND)	VR3001	S-VHS REC	DARK PICTURE
TAPE	**M. EQ.**	**SPEC.**	
VHS BLANK TAPE	OSCILLO-SCOPE	110+−5mVp-p	

Note:
Cover the Lens with black cap.

1. Connect the oscilloscope to TL5002 (HOT) and TL5001 (GND).
2. Make recording with SP mode.
3. Adjust the VR3001 so that luminance level is 110+−5mVp-p.

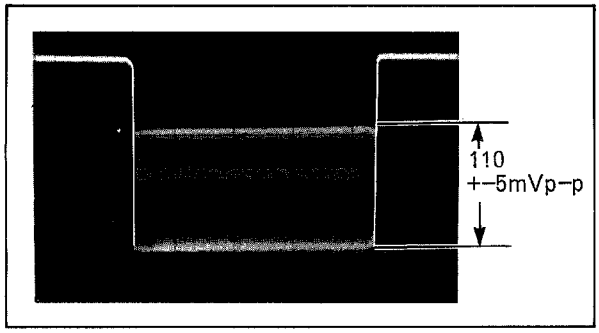


Fig. V4

8. YNR ADJUSTMENT

Purpose:
Improve the overall S/N Ratio especially in the Low Frequency component.

Symptom of Misadjustment:
The S/N Ratio is low.

TP	ADJ.	MODE	INPUT
TL3004	VR3005	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
ALIGNMENT TAPE VFM8080HQFP PORTION 2	OSCILLO-SCOPE	SIGNAL IS MINIMIZED (LESS THAN 50mV)	

9. TBC VCO (1) ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL3504	VR3503	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
VHS BLANK TAPE	FREQ. COUNTER	15.625±0.1kHz	

1. Playback the blank tape at no recorded portion.
2. Connect the frequency counter to TL3504.
3. Adjust VR3503 so that frequency is 15.625±0.1kHz.

10. TBC VCO (2) ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL3507	VR3501	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
VHS BLANK TAPE	FREQ. COUNTER	17.73±0.4MHz	

1. Playback the blank tape at no recorded portion.
2. Connect the frequency counter to TL3507.
3. Adjust VR3501 so that frequency is 17.73±0.4MHz.

11. LCD BIAS ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL3503	VR3505	PLAY	VIDEO SWEEP SIGNAL B6001 ⑩
TAPE	**M. EQ.**	**SPEC.**	
VHS BLANK TAPE	OSCILLO-SCOPE	MAXIMIZED AT 4MHz	

1. Set the sweep generator output as shown below.

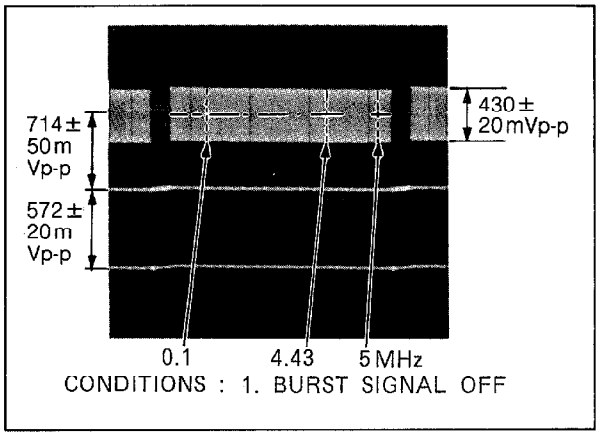


Fig. V5

2. Connect a jumper between B6001 ⑦ (CKJ ⑦) and B6001 ⑪ (CKJ ⑪).
3. Supply sweep signal to B6001 ⑩ (CKJ ⑩) through 100uF capacitor.
4. Playback the blank tape at no recorded portion.
5. Adjust VR3505 so that level at 4MHz become maximum.

12. PB Y LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR3504	VHS SELF RECORDING/ PB	COLOUR BAR B6001 ⑩
TAPE	**M. EQ.**	**SPEC.**	
VHS BLANK TAPE	OSCILLO-SCOPE	1.0±0.05Vp-p	

1. Terminate the video out by 75 ohm.
2. Connect a jumper wire between B6001 ⑦ and B6001 ⑪.
3. Supply colour bar signal to B6001 ⑩.
4. Record the signal a few minutes.
5. Connect an oscilloscope to video out.
6. Playback the recorded signal.
7. Adjust VR3504 so that Y level is 1.0±0.05Vp-p.

13. S-VHS VIDEO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR3006	S-VHS SELF RECORDING	COLOUR BAR B6001 ⑩ (CKJ ⑩)
TAPE	**M. EQ.**	**SPEC.**	
S-VHS BLANK TAPE	OSCILLO-SCOPE	A: 1.0+−0.1Vp-p	

1. Terminate the video out by 75 ohm.
2. Connect a jumper wire between B6001 ⑦ and B6001 ⑪.
3. Supply Colour Bar signal to Test Mode Pin 10.
4. Record the signal a few minutes.
5. Connect an oscilloscope to Video out.
6. Playback the recorded signal.
7. Adjust VR3006 until signal level is A=1.0+−0.1Vp-p.

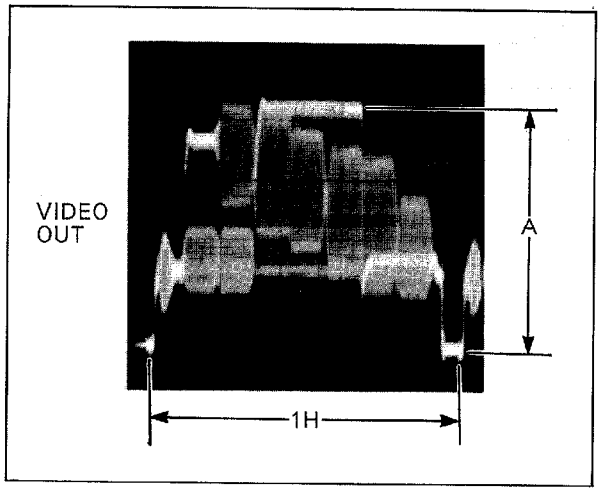


Fig. V6

14. COS EQ ADJUSTMENT

TP	ADJ.	MODE	INPUT
S-VHS LUMI OUT	VR3007	S-VHS SELF RECORDING/ PB	VIDEO SWEEP SIGNAL B6001 ⑩ (CKJ ⑩)
TAPE	**M. EQ.**	**SPEC.**	
S-VHS BLANK TAPE	VIDEO SEEP/ OSCILO-SCOPE	A=−4±1dB (62.5%)	

1. Set the sweep generator output as shown below.

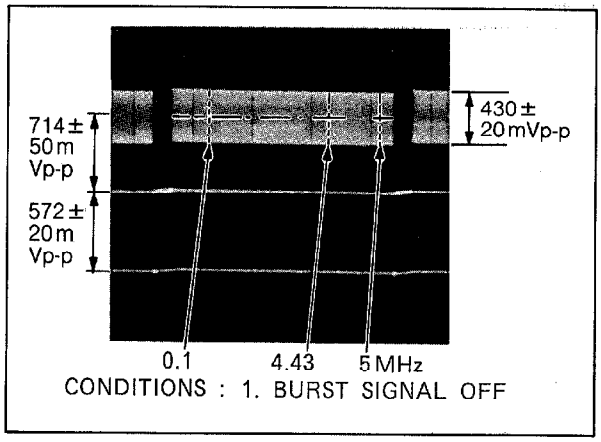


Fig. V7

2. Connect a jumper between B6001 ⑦ (CKJ ⑦) and B6001 ⑪ (CKJ ⑪).
3. Supply sweep signal to B6001 ⑩ (CKJ ⑩) through 100uF capacitor.
4. Record the signal for a about ten minutes.
5. Playback the recorded signal.
6. Adjust VR3007 so that level at 4MHz is within spec. as shown in Fig. V8.

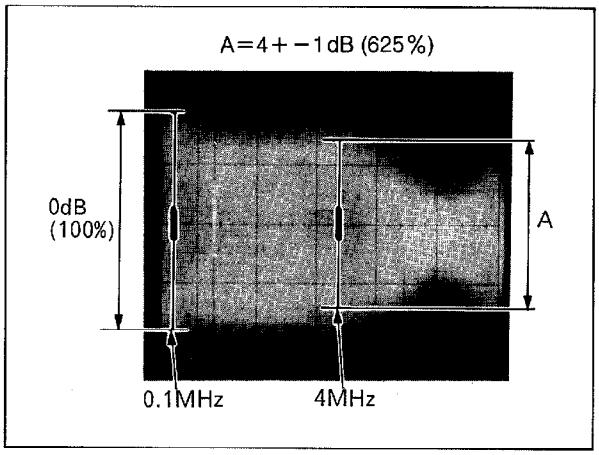


Fig. V8

AUDIO SECTION

15. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL4001 (HOT) TL4002 (GND)	VR4002	REC	disconnect P4001
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	oscilloscope (V.T.V.M.)	8.5±0.3mVp-p (3+0.1mVrms)	

Note:
Connector (P4001) must be disconnected.
Set the normal audio mode.

1. Connect an oscilloscope to TL4001 (HOT) and TL4002 (GND).
2. Make recording with SP mode.
3. Adjust VR4002 so that audio bias current is 8.5+−0.3mVp-p.

16. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR4001	VHS REC/PB	1kHz Audio 8.9±0.5mVp-p (−50dBV±0.5dB) CKR1 (P4001 ③) IN CKR2 (P4001 ②) GND
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	SIGNAL GENERATOR/ OSCILLO- SCOPE (V.T.V.M)	1.1+−0.1Vp-p (+8+−0.5dB)	

Note:
Audio bias current adjustment must be completed before the adjustment.

1. Set the normal audio mode.
2. Supply the audio signal (1kHz/−50dBV+−0.5dB sine-wave) to audio circuit through the test point.
3. Audio VR4001 so that the level is PB Level 1.1+−0.1Vp-p. (−8dB+−0.5dB)

Hi-Fi AUDIO SECTION

17. Hi-Fi AUDIO RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL5003 (HOT) TL5001 (GND)	VR4502	S-VHS RECORDING	
TAPE	**M. EQ.**	**SPEC.**	
S-VHS BLANK TAPE	OSCILLO- SCOPE	200+−5mVp-p	

1. Connector (P4001) must be disconnected.
2. Connect an OSCILLOSCOPE to TL5003 (HOT) and TL5001 (GND).
3. Adjust VR4502 so that the Audio recording current is 200+−5mVp-p as shown below.

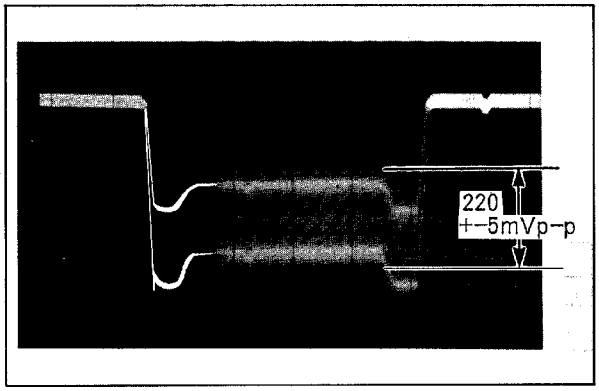


Fig. V9

18. AUDIO MUTING ADJUSTMENT

TP	ADJ.	MODE	INPUT
B5001-3	VR4501	PLAY	
TAPE	**M. EQ.**	**SPEC.**	
ALIGNMENT TAPE VFM8080HQFP PORTION 2	OSCILLO- SCOPE		

Note:
Tape Interchangeability Adjustment must be completed before this adjustment.

1. Playback the Alignment tape.
2. Push the tracking Button until signal level at B5001-3 becomes maximum.
3. Adjust VR4501 to counter-clockwise until sound mode change to normal from Hi-Fi mode, and return it to clockwise until sound mode change to Hi-Fi from normal mode.

VITC SECTION

19. VITC SIGNAL LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT 75 ohm TERMINATED	VR3802	VHS REC PAUSE	GRAY SCALE CHART
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	V/S 1.8+−0.07 (540+−20mVp-p)	

Note:
Cover the Lens with black cap.

1. Set the unit to VHS-Movie. Mode and set to Rec Pause mode.
2. Adjust the VR3802 so that ratio of V and S is 1.8+−0.07 as shown below.

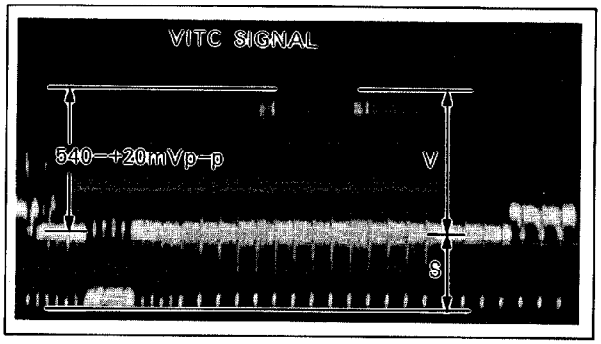
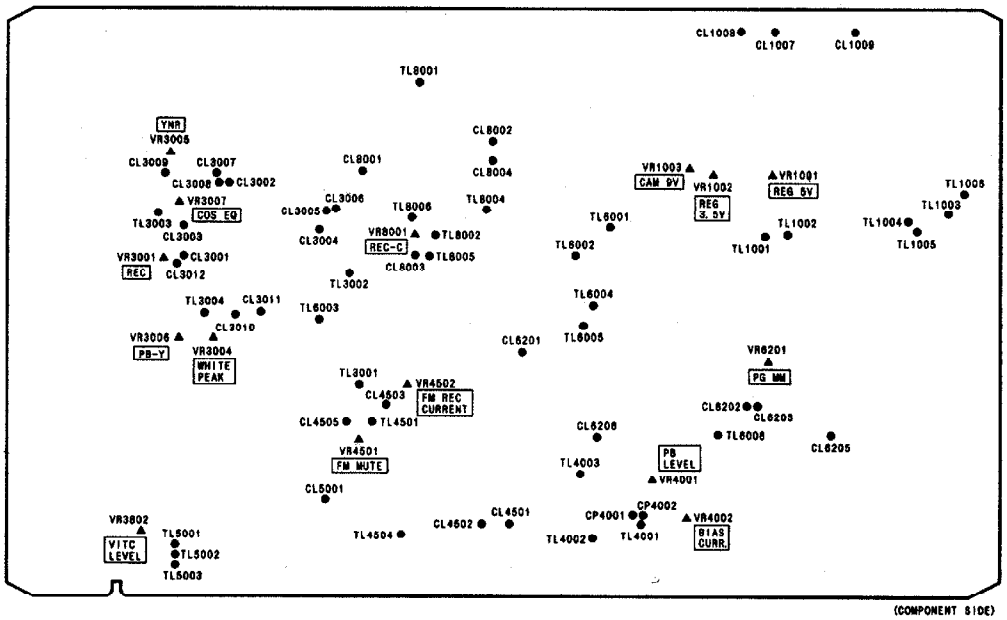


Fig. V10

LOCATION OF TEST POINTS AND CONTROLS

MAIN C.B.A.



Memo

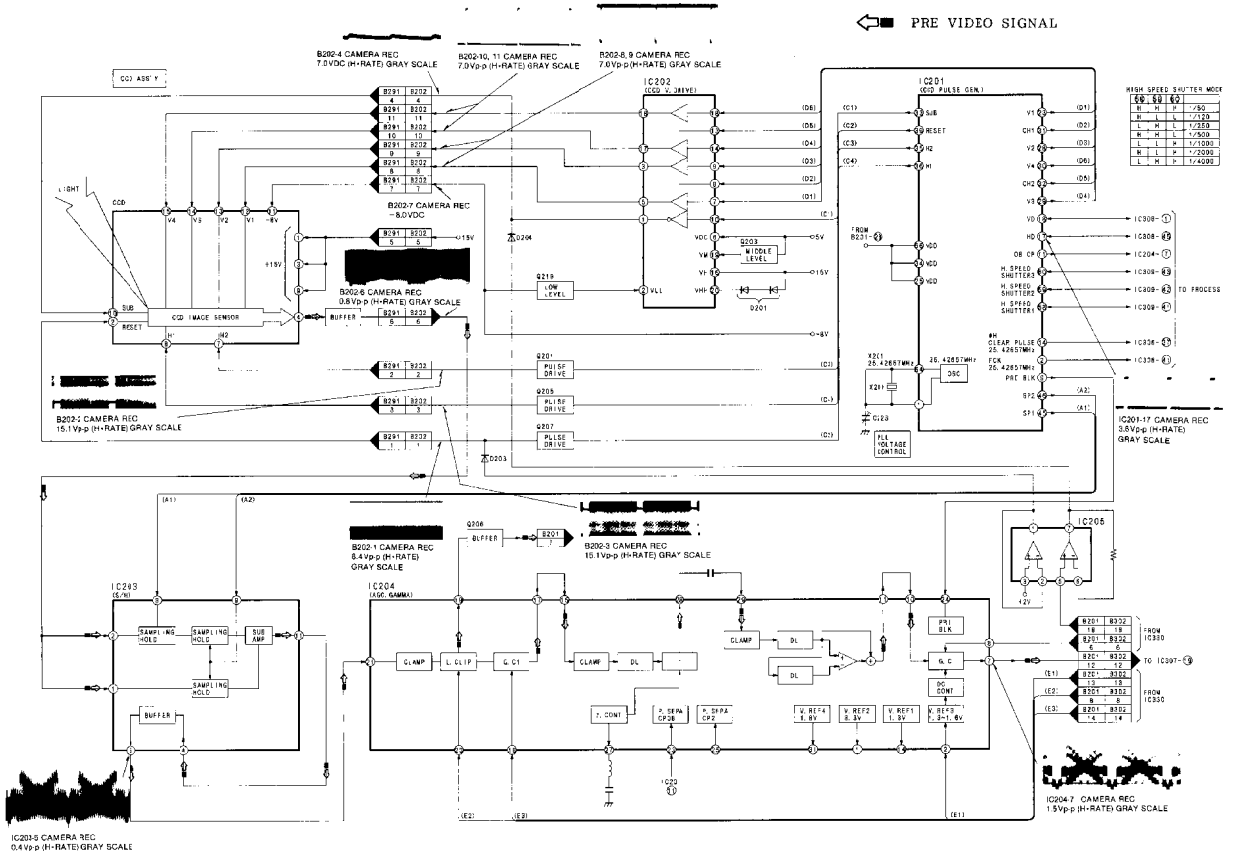
ABBREVIATION

INITIAL/LOGO	ABBREVIATION
A-DUB	AUDIO DUBBING
A-ORP	AUDIO OVERLAP PULSE
A-TR	AUTO TRACKING
AD REC	AUDIO DELAYD REC
AF CS	AF CHIP SELECT
AFADE	AUDIO FADE
ALC CONT	ALC CONTROL
ALC MAIN	ALC DRIVE
ART-V	ARTIFICIAL VERTICAL SYNC SIGNAL
BF	BURST FLAG PULSE
BLK	BLANKING
BM	BALANCED MODULATOR
B-Y KB	B-Y CARRIER BALANCE
BUF or BF	BUFFER
CAPVM	CAPSTAN MOTOR CURRENT
CCW	COUNTER CLOCK WISE
CDS	CCD OUTPUT SIGINAL
CFM 1 ~4	CHROMA FIELD MEMORY
CGC	CHROMA GAIN CONTROL
CHR MIX	CHARACTER MIX
CLK or CL	CLOCK
CMEM	CHROMA MEMORY SIGNAL
CMO	CHROMA MEMORY OUTPUT
CP	CLAMP PULSE
CPOB	OB CLAMP PULSE
CS	CHIP SELECT
CW	CLOCK WISE
CYLVM	CYLINDER MOTOR CURRENT
DL	DELAY LINE
DS1	DOUBLE SAMPLING PULSE 1
DS2	DOUBLE SAMPLING PULSE 2
DSP	DIGITAL SIGNAL PROCESS
ECM	ELECTRIC CONDENSER MIC
EE CS	EEPROM CHIP SELECT
EECS	EEPROM CHIP SELECT
ENV-DET	ENVELOPE LEVEL DETECT
EZOOM	ELECTRIC ZOOM
F-ENC	FOCUS ENCODER
FM MUTE	FM AUDIO MUTE
FMD REC	FM AUDIO DELAY REC
FMOEM	FIELD MEMORY ENABLE
FNO	F VALUE
H-CLR	HIGH CLEAR
HBR-SET	HIGH BRIGET SET
HLT	HIGHT BRIGHT SIGNAL
HD	HORIZONTAL DRIVE PULSE
IOU	R-Y ANALOGUE SIGNAL OUTPUT
IOV	B-Y ANALOGUE SIGNAL OUTPUT
IRQ	INTERRUPT REQUEST
LD	LOAD PULSE
LED CONT	LED CONTROL
LI BATT	LITHIUM BATTERY
LSB	LEAST SIGNIFICANT BIT
MD	MODULATOR
MF-F	MANUAL FOCUS FAR
MF-N	MANUAL FOCUS NEAR
MSB	MOST SIGNIFICANT BIT
N-DE	NON LINER DE-EMPHASIS
N-LE	NON LINER EMPHSIS

INITIAL/LOGO	ABBREVIATION
NRD	NON REC DATA
NRE	READ ENABLE INPUT(LOW ACTIVE)
NWE	WRITE ENABLE INPUT(LOW ACTIVE)
OE	OUTPUT ENABLE
OP2	OPERATINAL AMP OUTPUT 2
OSD	ON SCREEN DISPLAY
PCBM(B-Y)	B-Y CARRIER BALANCE
PCBM(R-Y)	R-Y CARRIER BALANCE
PEDE CONT	PEDESTAL CONTROL
POR	POWER ON RESET
PREBLK	PRE BLANKING
PWM	PULSE WIDTH MODULATOR
R/B	READY/BUSY
R-Y KB	R-Y CARRIER BALANCE
RAD	READ ADDRESS DATA
RAE	READ ADDRESS ENABLE
RE	READ ENANLE
RERASE	ROTARY ERASE HEAD
RSTR	RESET READ
RSTW	RESET WRITE
SBD	SERIAL DATA
SBO	SERIAL OUTPUT
TL	TORQUE LIMIT
TRFIX	TRACKING FIX
UVSEL	U/V SELCT
VCO	VOLTAGE CONTROL OSCILLTOR
VCTL	Φ VOLTAGE CHARGE CONTROL
VD	VERTICAL DRIVE PULSE
VDREC	VIDEO DELAYED REC
VMD	VELOCITY MODE DATA
VORP	VIDEO OVERLAP
VRO	REFERENCE VOLTAGE OUTPUT
WADE	WRITE ADDRESS ENABLE
WE	WRITE ENABLE
YNC	NOISE CANCELER (LUMINANCE)
YNR	NOISE REDUCTION(LUMINANCE)
Z-ENC	ZOOM ENCODER

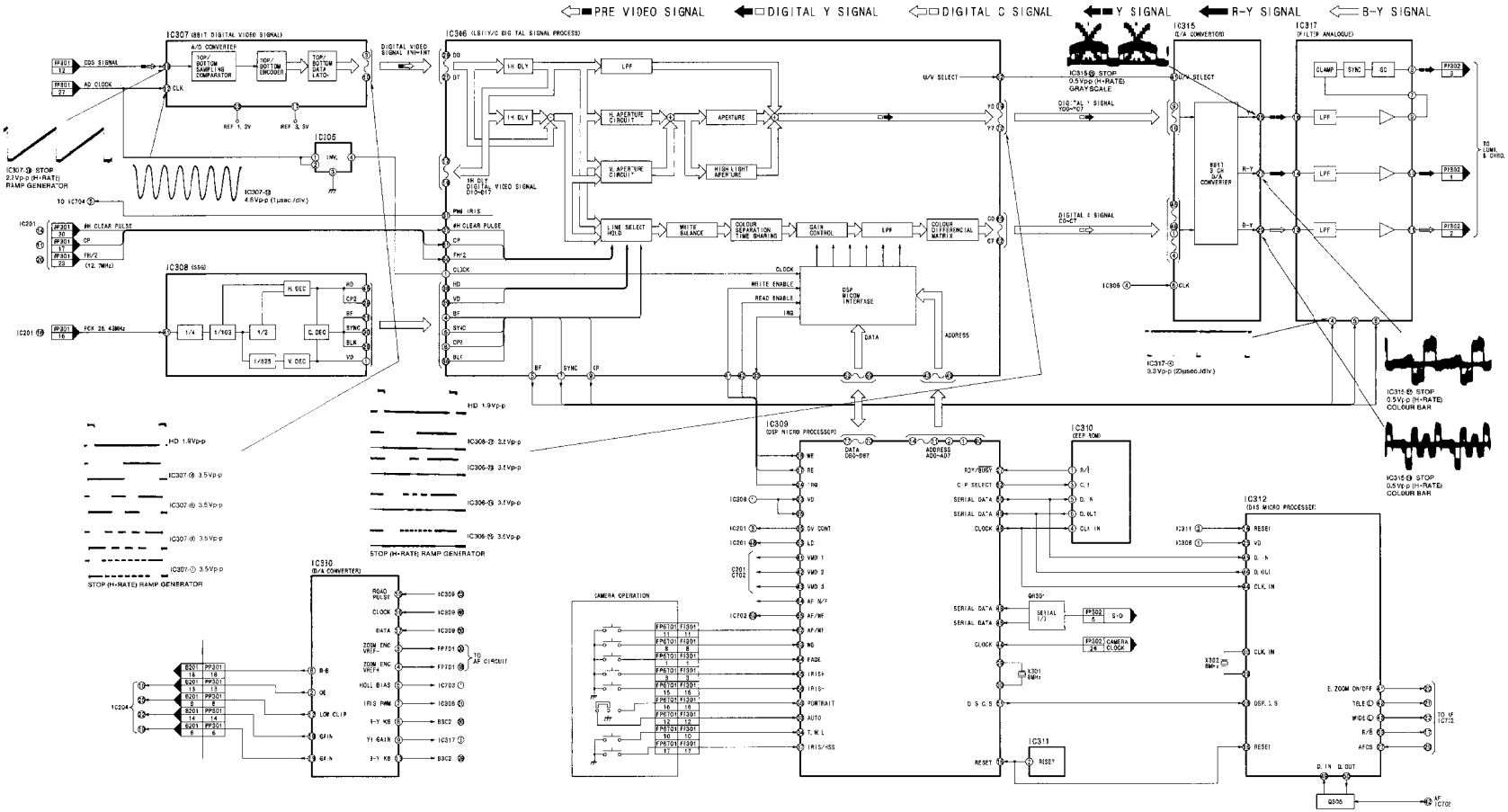
SECTION 3
BLOCK DIAGRAM & SCHEMATIC DIAGRAMS

3-1. CCD DRIVE BLOCK DIAGRAM


PRE VIDEO SIGNAL
B202-4 CAMERA REC 7.0VDC (H-RATE) GRAY SCALE
B202-10, 11 CAMERA REC 7.0Vp-p (H-RATE) GRAY SCALE
B202-8, 9 CAMERA REC 7.0Vp-p (H-RATE) GRAY SCALE
CCD ASS'Y
IC202 (CCD V. DRIVE)
IC201 (CCD PULSE GEN.)
HIGH SPEED SHUTTER MODE
B202-7 CAMERA REC -8.0VDC
B202-6 CAMERA REC 0.8Vp-p (H-RATE) GRAY SCALE
B202-5 CAMERA REC 15.1Vp-p (H-RATE) GRAY SCALE
CCD IMAGE SENSOR
IC201-17 CAMERA REC 3.6Vp-p (H-RATE) GRAY SCALE
B202-1 CAMERA REC 8.4Vp-p (H-RATE) GRAY SCALE
B202-3 CAMERA REC 15.1Vp-p (H-RATE) GRAY SCALE
IC203 (S/H)
IC204 (AGC, GAMMA)
IC205
IC204-7 CAMERA REC 1.5Vp-p (H-RATE) GRAY SCALE
IC203-5 CAMERA REC 0.4Vp-p (H-RATE) GRAY SCALE
TO PROCESS
TO IC397
FROM IC330
FROM IC330

Next Page:
AUTO FOCUS Section

3-3. PROCESS BLOCK DIAGRAM



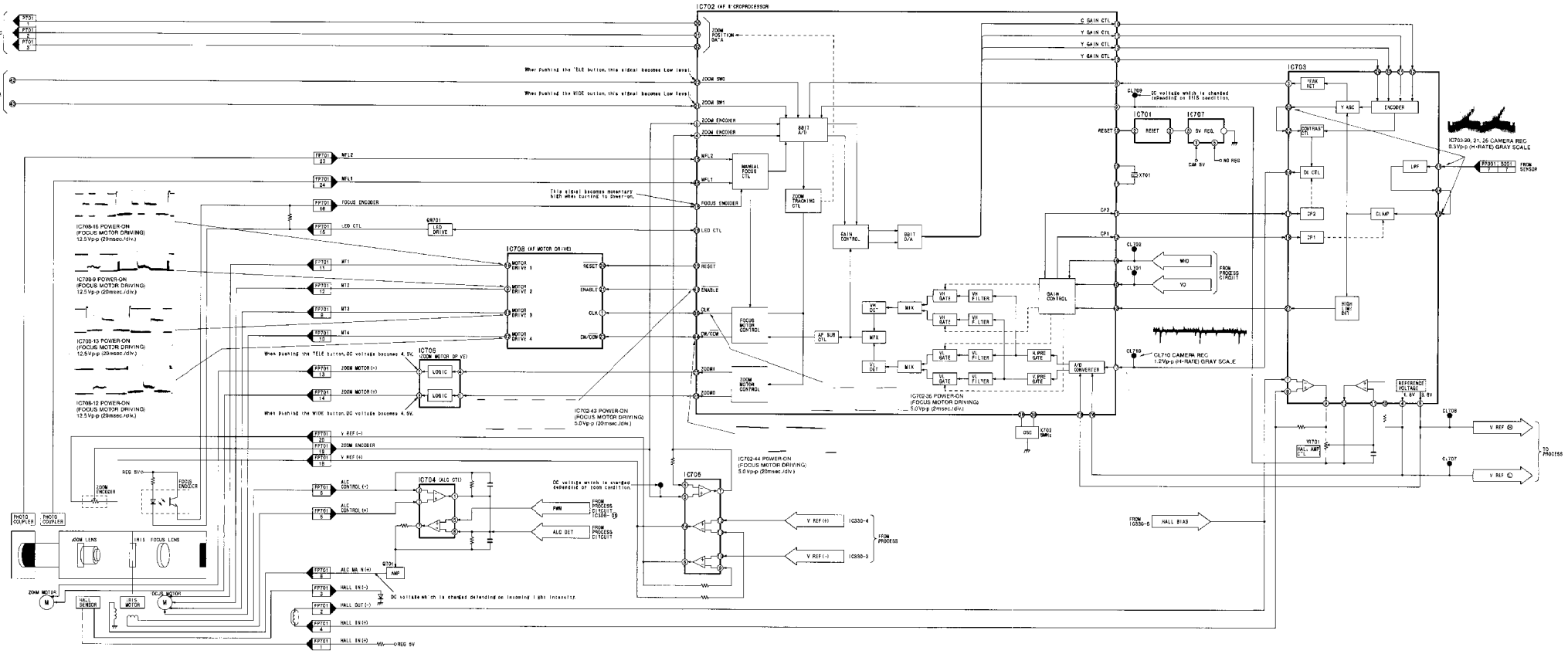
3—7

3—8

3—9

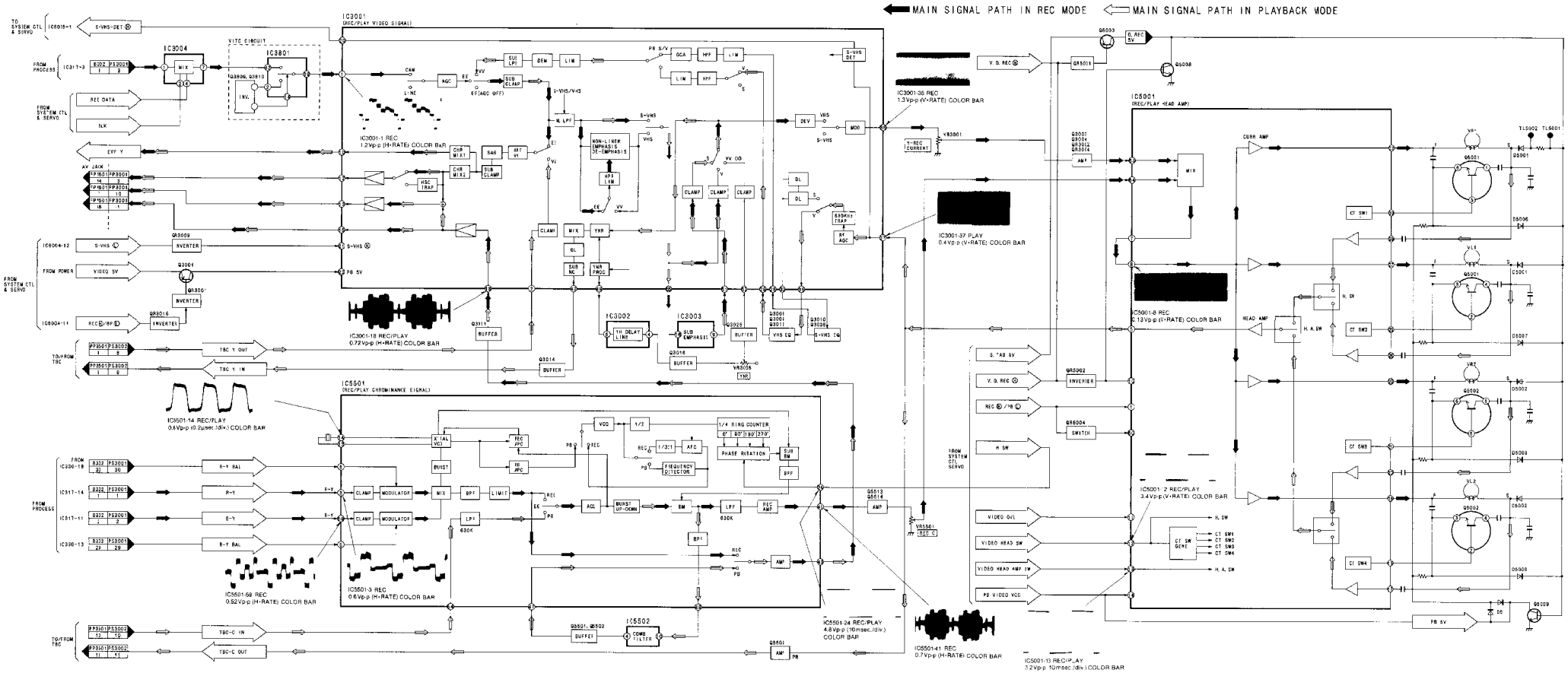
Next Page:
LUMI/CHRO & HA Section

3-2. AUTO FOCUS BLOCK DIAGRAM

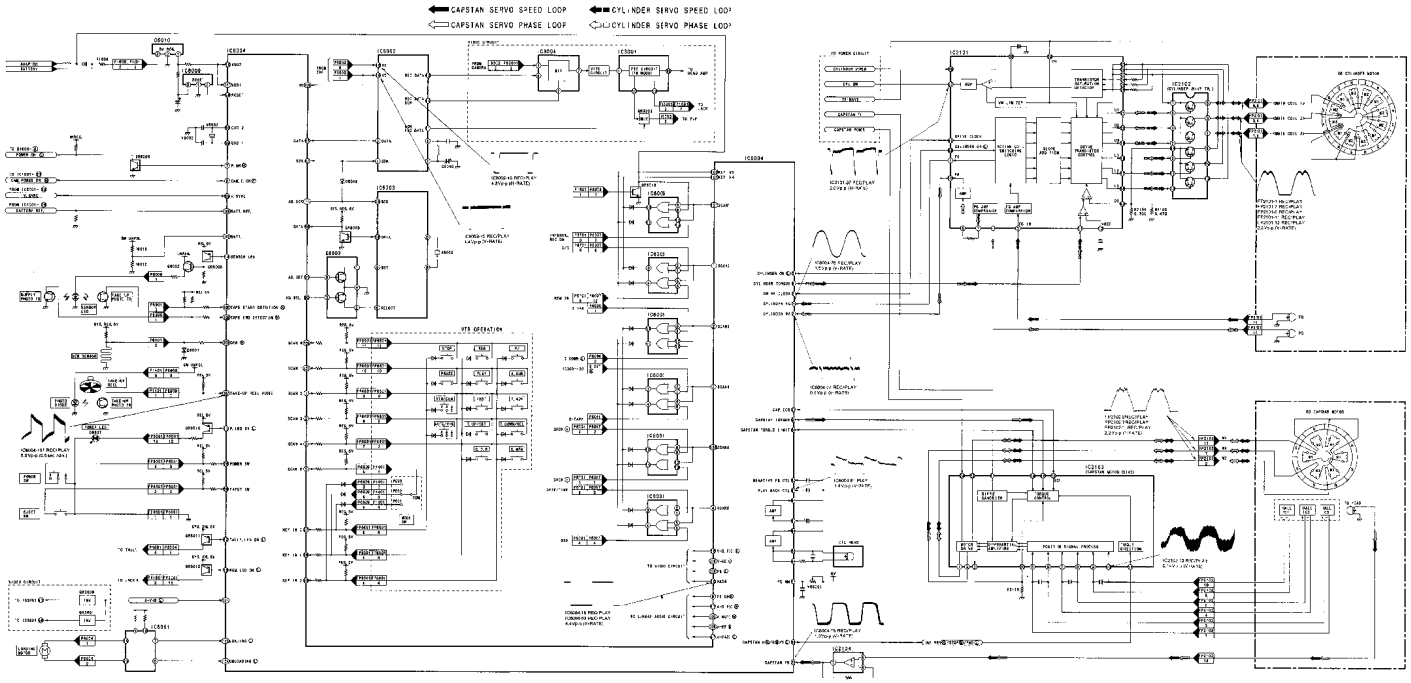

IC702 (AF & CROPROCESSOR)
IC708 (AF MOTOR DRIVE)
IC706 (ZOOM MOTOR DRIVE)
IC704 (ALC CTL)
IC705
IC701
IC707
IC703
IC708-16 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec./div.)
IC708-9 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec./div.)
IC708-13 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec./div.)
IC708-12 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec./div.)
IC702-43 POWER-ON (FOCUS MOTOR DRIVING) 5.0Vp-p (20msec./div.)
IC702-64 POWER-ON (FOCUS MOTOR DRIVING) 5.0Vp-p (20msec./div.)
IC702-36 POWER-ON (FOCUS MOTOR DRIVING) 5.0Vp-p (2msec./div.)
CL710 CAMERA REC 1.2Vp-p (H-RATE) GRAY SCALE
IC703-20, 21, 26 CAMERA REC 0.3Vp-p (H-RATE) GRAY SCALE
When pushing the TELE button, this signal becomes Low level.
When pushing the WIDE button, this signal becomes Low level.
When pushing the TELE button, DC voltage becomes 4.5V.
When pushing the WIDE button, DC voltage becomes 4.5V.
DC voltage which is changed depending on zoom condition.
DC voltage which is changed depending on incoming light intensity.
ZOOM LENS
IRIS
FOCUS LENS
ZOOM MOTOR
IRIS MOTOR
DC-S MOTOR
HALL SENSOR
PHOTO COUPLER
PHOTO COUPLER
ZOOM ENCODER
FOCUS ENCODER
REG 5V
FROM PROCESS CIRCUIT
TO PROCESS

3—4 3—5 3—6

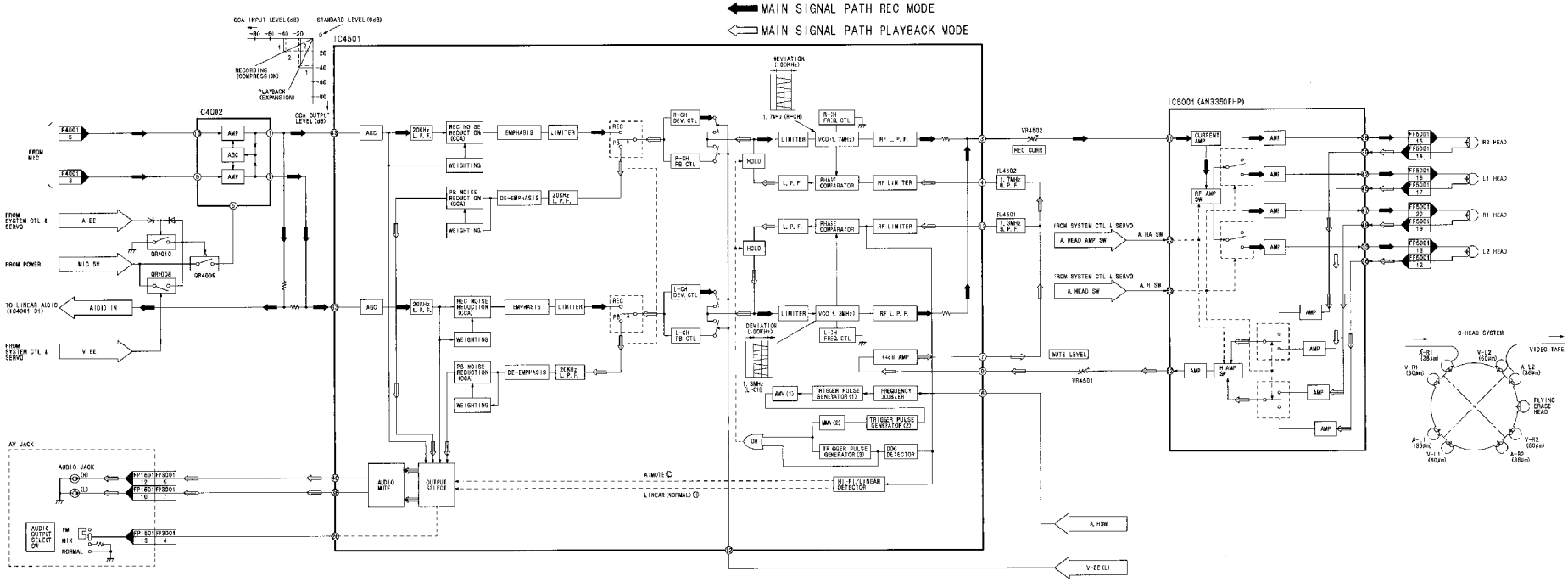
3-4. LUMINANCE/CHROMINANCE & HEAD AMP BLOCK DIAGRAM



3-5. SYSTEM CONTROL & SERVO BLOCK DIAGRAM



3-6. Hi-Fi AUDIO BLOCK DIAGRAM



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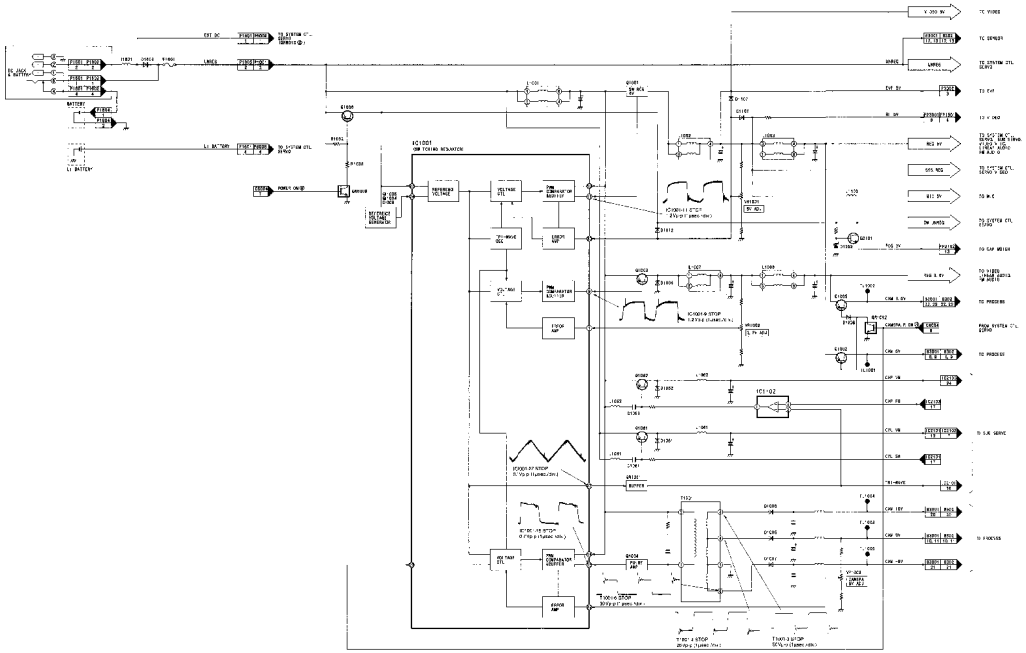
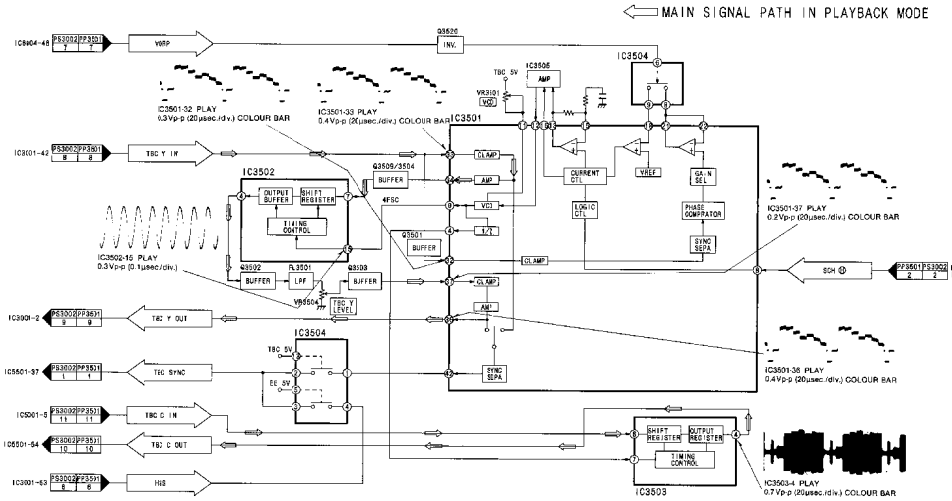
SYSTEM CTL & SERVO Section

3-7. POWER BLOCK DIAGRAM

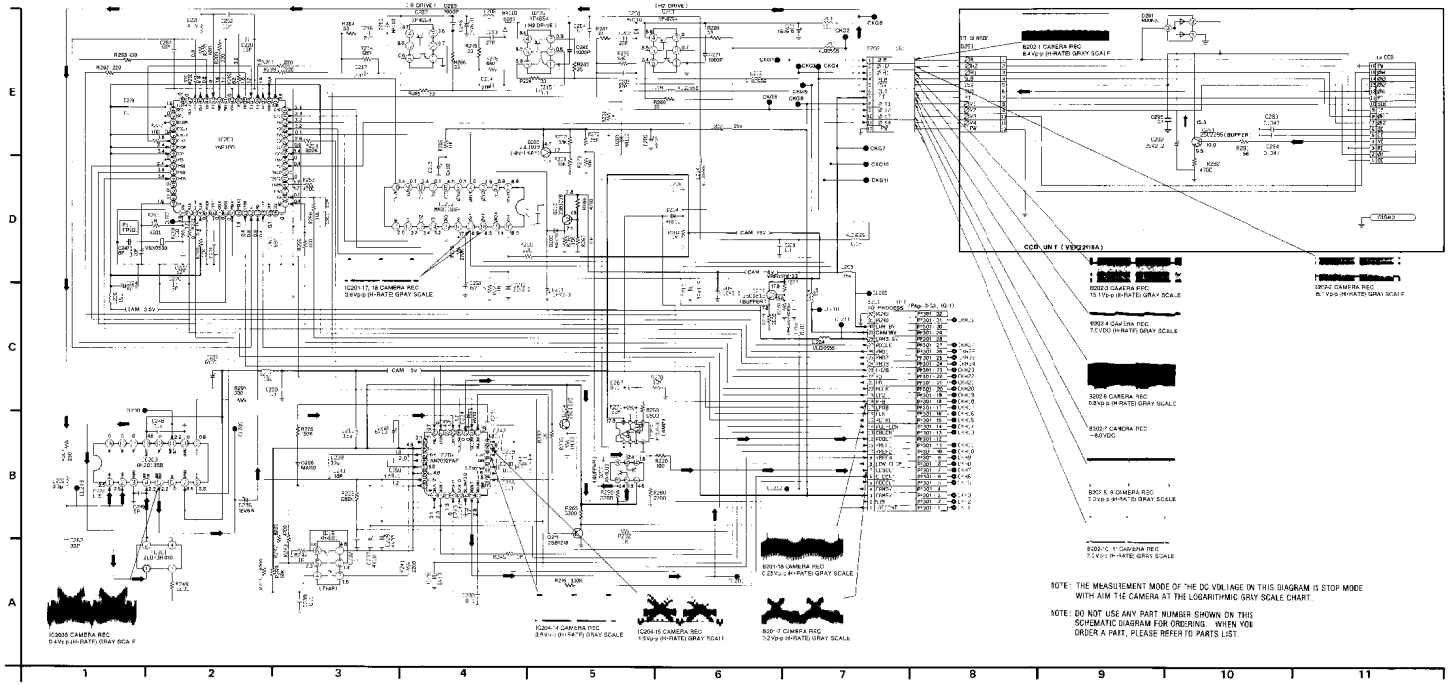


3-8. TBC BLOCK DIAGRAM



3-9. CCD DRIVE SCHEMATIC DIAGRAM

VIDEO SIGNAL



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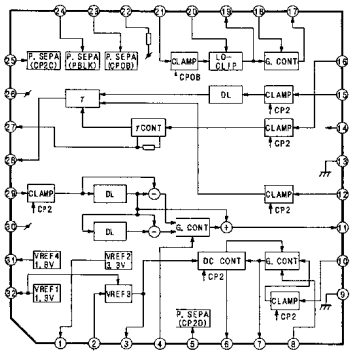
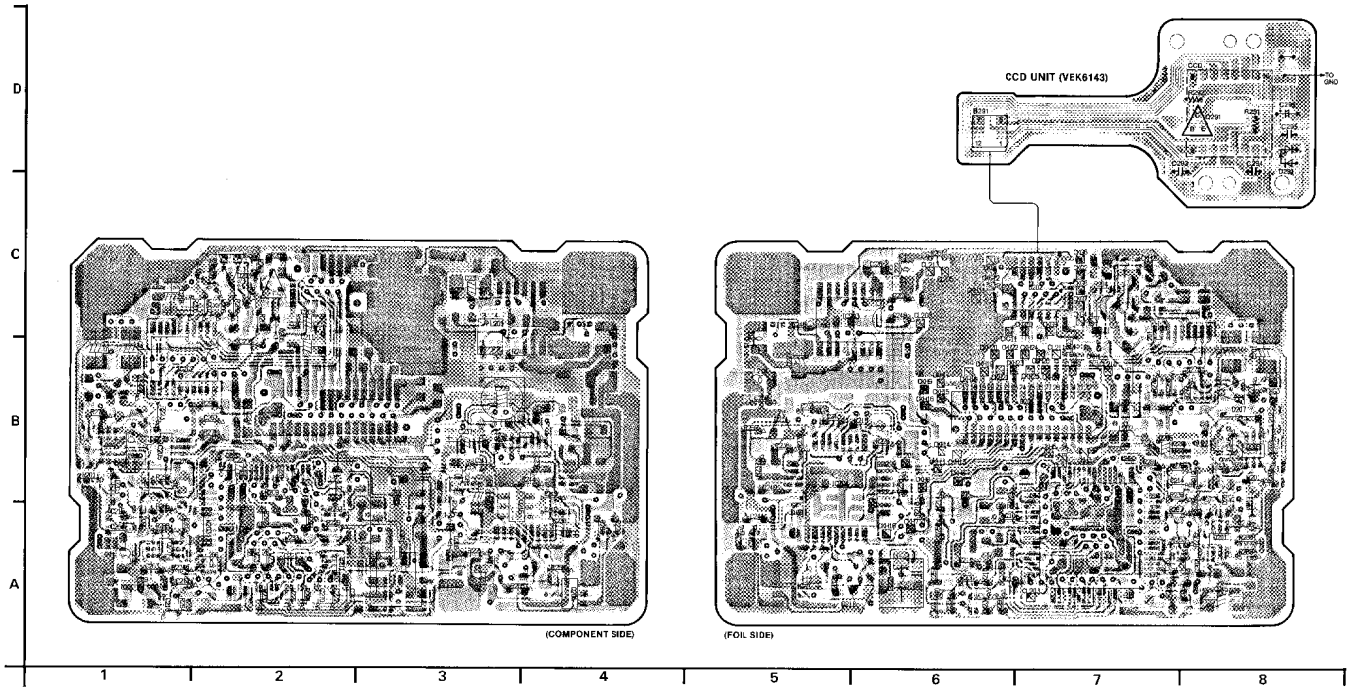
IC204
AN2039FAP
AN2032FAP



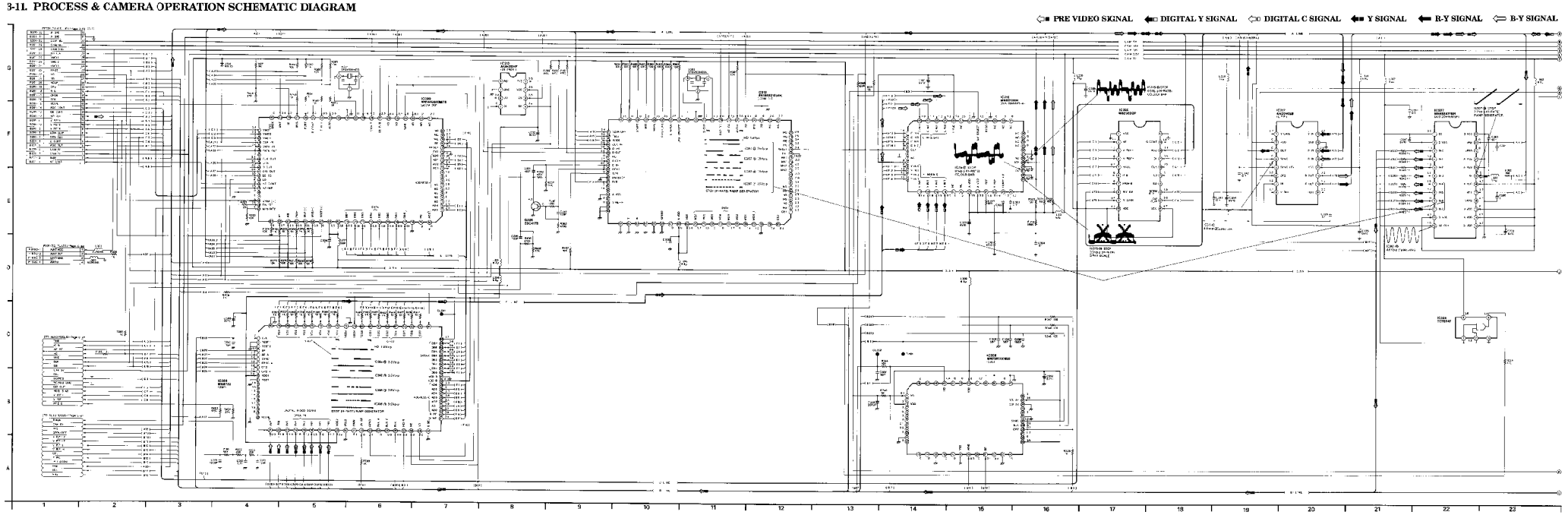
3-10. CCD DRIVE C.B.A. (VEP22117A)



CCD DRIVE C.B.A.	
Transistor	
Q201	A-6
Q202	B-6
Q203	C-2
Q205	B-6
Q209	B-1
Q207	A-1
Q214	B-5
Q215	A-3
Q216	C-2
Integrated Circuit	
IC201	B-7
IC202	C-1
IC203	C-5
IC204	B-3
IC205	B-1
Test Point	
CL201	B-6
CL203	A-7
CL205	C-6
CL208	C-5
CL209	B-7
CL210	B-7
CL211	B-7
CL212	B-7
CL213	C-5
Adjustment	
C202	A-5
Connector	
BJ01	B-5
BJ02	C-7

ADDRESS INFORMATION

3-11. PROCESS & CAMERA OPERATION SCHEMATIC DIAGRAM



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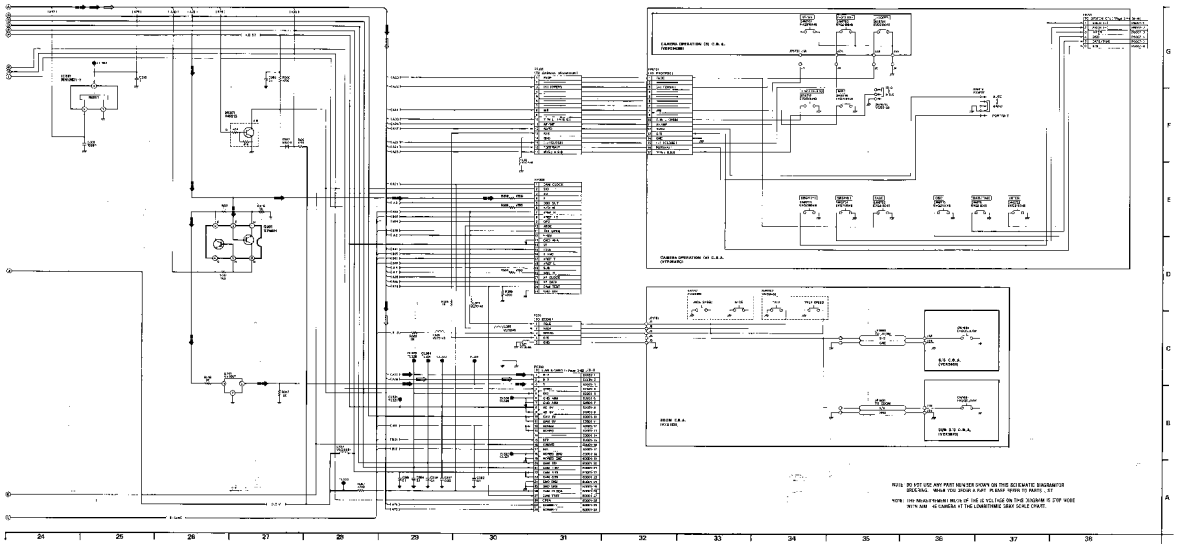
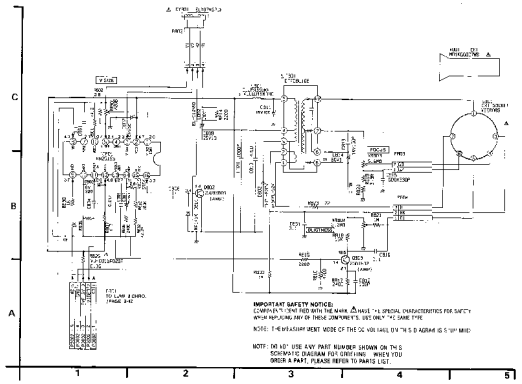
CCD DRIVE Section



3-12. EVF SCHEMATIC DIAGRAM



EVF C.B.A.	
Transistor	
Q600	A-2
Q602	A-2
Integrated Circuit	
IC601	A-4
Adjustment	
VR601	A-3
VR603	A-3
VR604	A-3
Connector	
P01	A-4
P602	A-4
P603	A-2
P604	A-2

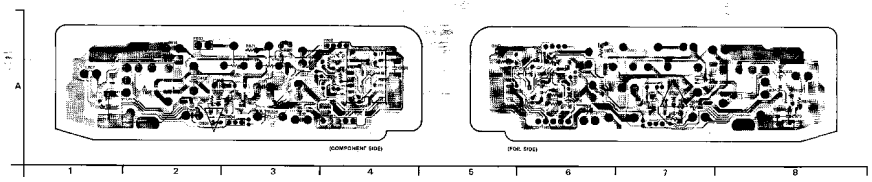
ADDRESS INFORMATION

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK △ HAVE "+" SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY "+" SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE DIAGRAM IS SHOWN IN

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

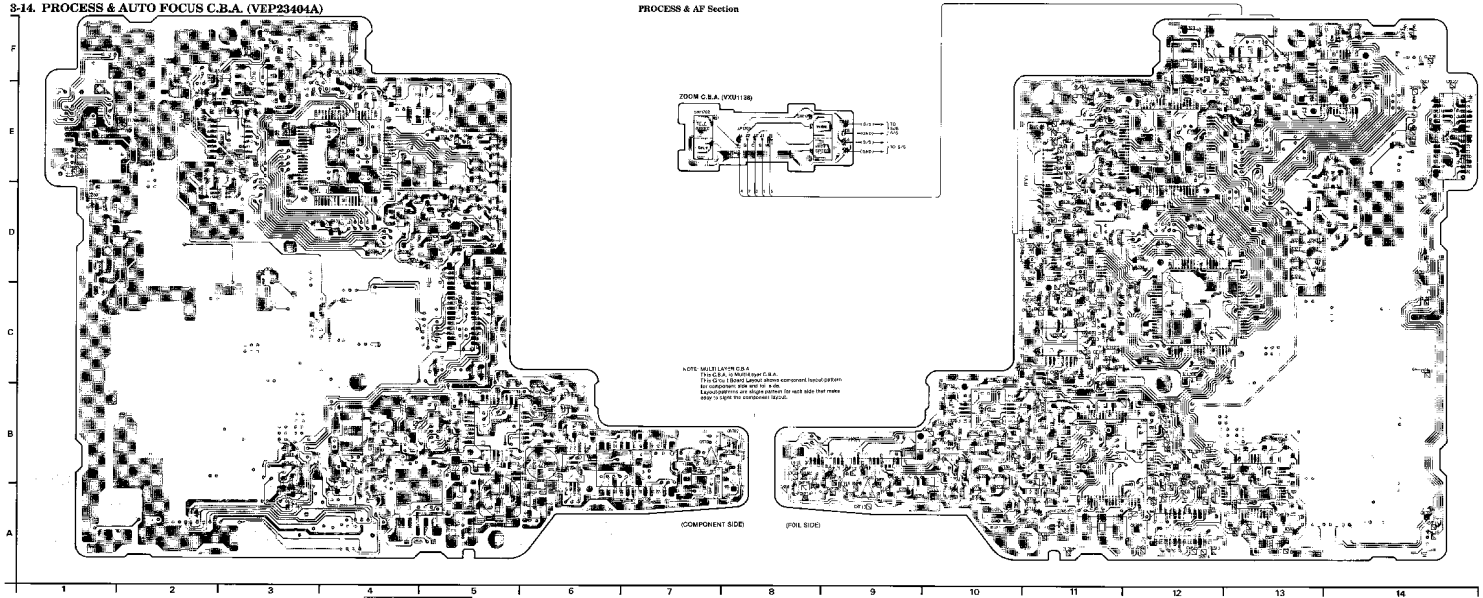
3-13. EVF C.B.A. (VEP28068A)



(COMPONENT SIDE)

(FOIL SIDE)

3-14. PROCESS & AUTO FOCUS C.B.A. (VEP23404A)



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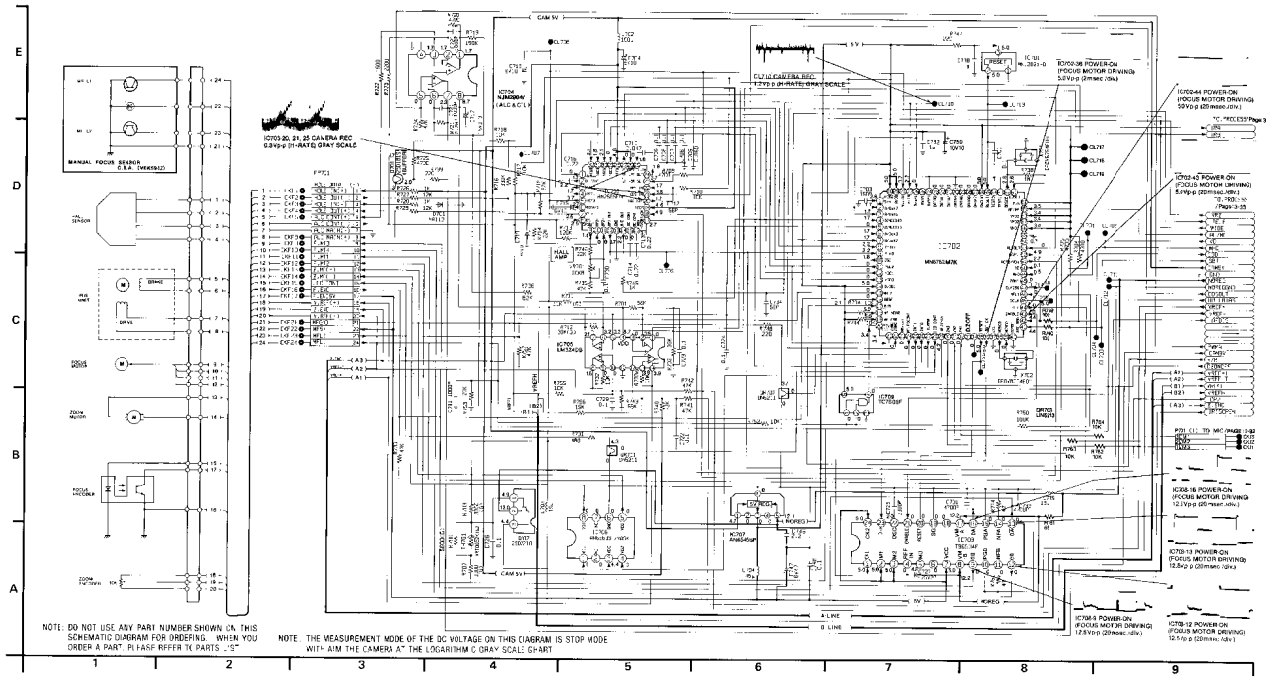
PROCESS & EVF Section

PROCESS & AF Section

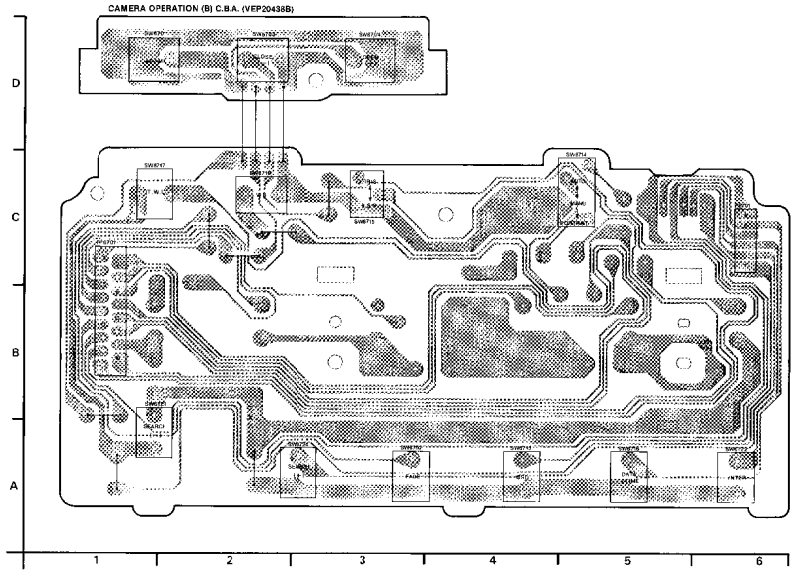
PROCESS & AF C.B.A. ADDRESS INFORMATION

PROCESS Section					
Integrated Circuit		Capacitor		IC45	B-3
IC05	D-4	C205	C-11	IC47	B-3
IC90	C-12	C305	C-12	IC48	C-12
IC97	D-11	C307	C-11	IC50	C-12
IC98	B-13	C308	D-11	IC51	C-11
IC99	E-12	C309	E-12	IC52	C-11
IC201	F-3	C311	C-11	IC53	B-5
IC211	D-15	C312	C-11	IC54	B-5
IC301	B-4	C313	C-11	IC55	D-5
IC351	F-14	C314	A-13	IC56	D-11
IC371	E-5	C315	F-2	IC57	C-12
IC702	C-11	C316	F-2	IC58	C-10
Transistor		C317	E-12	IC59	B-12
Q301	D-3	C321	E-13	IC60	D-10
Transistor & Resistor		C322	F-14	IC61	D-12
QR101	B-5	C323	F-14	IC62	D-5
QR102	A-13	C324	F-14	IC63	D-5
Diode		C325	E-2	IC64	D-5
D301	E-11	C326	E-2	IC65	C-5
D302	D-5	C328	D-3	IC66	C-5
Test Point		C329	D-12	IC67	C-11
CL201	B-12	C332	B-2	IC68	C-11
CL202	B-12	C334	F-3	IC69	C-11
CL203	E-15	C335	E-3	IC70	C-11
CL231	C-15	C339	A-13	IC71	C-11
CL232	C-15	C340	A-13	IC72	B-5
CL234	D-11	C341	B-2	IC73	B-5
CL235	F-15	C342	E-3	IC74	D-5
CL236	D-15	C343	F-2	IC75	B-4
CL237	D-10	C350	D-1	IC76	A-5
TL201	C-11	C351	D-1	IC77	A-5
TL202	B-1	C352	D-1	IC78	A-2
TL203	B-1	C353	D-11	IC79	B-2
TL204	E-1	C360	D-11	IC80	A-2
TL205	E-1	Resistor		IC81	B-2
TL206	A-2	R201	C-11	IC82	B-2
TL207	B-1	R202	C-11	IC83	B-2
TL208	E-1	R203	C-12	IC84	B-2
Connector		R205	A-13	IC85	B-2
PR701	E-11	R206	A-13	IC86	B-2
P201	F-6	R207	E-3	IC87	B-2
P303	F-13	R208	C-11	IC88	B-2
PR101	C-5	R209	F-14	IC89	B-2
PR103	A-12	R210	C-5	IC90	B-2
PR105	E-15	R211	E-13	IC91	B-2
Crystal		R215	E-2	IC92	B-2
X201	F-12	R216	D-2	IC93	B-2
X302	C-5	R217	E-14	IC94	B-2
Filter		R218	F-14	IC95	B-2
FL201	E-14	R219	F-14	IC96	B-2
Coil		R220	E-2	IC97	B-2
L301	F-4	R221	E-2	IC98	B-2
L302	F-3	R222	F-2	IC99	B-2
L303	C-11	R223	D-12	IC100	B-2
L304	C-12	R224	C-13	IC101	B-2
L305	C-12	R225	C-12	IC102	B-2
L306	D-4	R226	E-2	IC103	B-2
L307	C-11	R227	D-13	IC104	B-2
L308	B-12	R228	E-13	IC105	B-2
L309	F-2	R229	E-1	IC106	B-2
L310	F-2	R230	D-13	IC107	B-2
L311	E-2	R231	E-13	IC108	B-2
L312	F-2	R232	E-13	IC109	B-2
L313	C-3	R233	E-3	IC110	B-2
L314	D-11	R234	E-3	IC111	B-2
L315	D-11	R235	D-13	IC112	B-2
L316	F-15	R236	D-13	IC113	B-2
L317	F-15	R237	F-4	IC114	B-2
L318	F-15	R238	F-3	IC115	B-2
L319	F-15	R239	F-14	IC116	B-2
L320	F-15	R240	C-12	IC117	B-2
L321	F-15	R241	A-5	IC118	B-2
L322	F-15	R242	B-5	IC119	B-2
L323	F-15	R243	B-5	Connector	
L324	F-15	R244	A-5	PF101	D-4
L325	F-15	R245	B-5	Crystal	
L326	F-15	R246	C-12	X701	B-1
L327	F-15	R247	A-5	X702	A-1
L328	F-15	R248	A-5	Coil	
L329	F-15	R249	B-5	L702	B-4
L330	F-15	R250	B-5	L703	A-1
L331	F-15	R251	B-5	L704	A-1
L332	F-15	R252	B-5	L705	A-1
L333	F-15	R253	B-5	Capacitor	
L334	F-15	R254	B-5	C701	B-1
L335	F-15	R255	B-5	C702	B-1
L336	F-15	R256	B-5	C704	B-1
L337	F-15	R257	B-5	C705	A-1
L338	F-15	R258	B-5	C706	B-1
L339	F-15	R259	B-5	C707	B-1
L340	F-15	R260	B-5	C708	B-1
L341	F-15	R261	B-5	C709	B-1
L342	F-15	R262	B-5	C710	B-1
L343	F-15	R263	B-5	C711	A-1
L344	F-15	R264	B-5	C712	B-1
L345	F-15	R265	B-5	C713	B-1
L346	F-15	R266	B-5	C714	B-1
L347	F-15	R267	B-5	C715	B-1
L348	F-15	R268	B-5	C716	B-1
L349	F-15	R269	B-5	C717	B-1
L350	F-15	R270	B-5	C718	B-1
L351	F-15	R271	B-5	C719	B-1
L352	F-15	R272	B-5	C720	B-1
L353	F-15	R273	B-5	C721	B-1
L354	F-15	R274	B-5	C722	B-1
L355	F-15	R275	B-5	C723	B-1
L356	F-15	R276	B-5	C724	B-1
L357	F-15	R277	B-5	C727	A-1
L358	F-15	R278	B-5	C728	A-1
L359	F-15	R279	B-5	C729	B-1
L360	F-15	R280	B-5	C730	B-1
L361	F-15	R281	B-5	C731	B-1

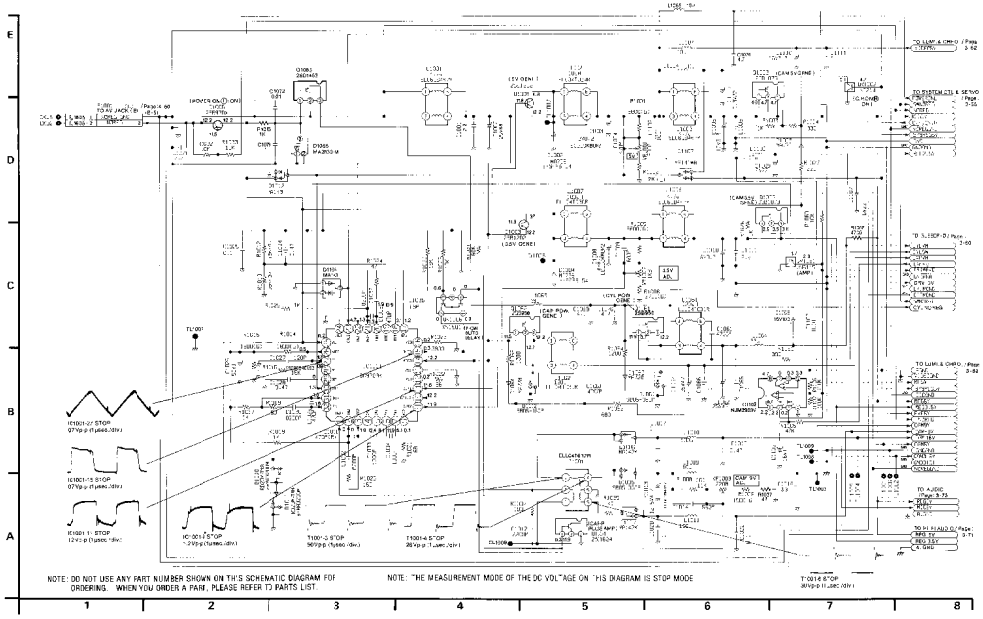
3-15. AUTO FOCUS SCHEMATIC DIAGRAM


MANUAL FOCUS SENSOR C.B.A. (VEK5912)
IC703-20, 21, 25 CAMERA REC 0.8Vp-p (H-RATE) GRAY SCALE
CL710 CAMERA REC 1.2Vp-p (H-RATE) GRAY SCALE
IC703-36 POWER-ON (FOCUS MOTOR DRIVING) 3.0Vp-p (2msec /div.)
IC703-44 POWER-ON (FOCUS MOTOR DRIVING) 55Vp-p (20msec /div.)
IC703-43 POWER-ON (FOCUS MOTOR DRIVING) 5.4Vp-p (20msec /div.)
IC703-16 POWER-ON (FOCUS MOTOR DRIVING) 12.1Vp-p (20 msec /div.)
IC703-13 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec /div.)
IC703-9 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec /div.)
IC703-12 POWER-ON (FOCUS MOTOR DRIVING) 12.5Vp-p (20msec /div.)
A LINE
B LINE
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHM C GRAY SCALE CHART

3-16. CAMERA OPERATION (A) C.B.A. (VEP20437C)



3-17. POWER SCHEMATIC DIAGRAM


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE

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AF & CAMERA OPERATION Section

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART

REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	0	0	0	0	0	0	0	0	12.2	12.2	0	5	5	0	0	0	0	0	0
REPLAY	0	0	0	0	0	0	0	0	0	12.1	12.1	0	5	5	0	0	0.1	0	0	0
F.F	0	0	0	0	0	0	0	0	0	12.0	12.1	0	5	5	0	0	0	0	0	0

REF. NO.	IC6001																			
MODE	21	22	23	24																
STOP	0	0	0	0																
REPLAY	0	0	0.1	0																
F.F	0	0	0	0																

REF. NO.	IC6002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	4.6	0.1	4.7	4.7	4.7	1.7	1.7	0	0	0	0	0.1	0	0	4.3	3.8				
REPLAY	4.7	0.1	4.7	4.7	4.7	1.7	1.7	0	0	0	0	0	0	0	4.3	3.7				
F.F	4.7	0.1	4.7	4.7	4.7	1.7	1.7	0	0	0	0	0	0	0	4.3	3.8				

REF. NO.	IC6003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0	0.8	0	0	0.5	0.8	0	1.8	1.8	4.7	0	0	0	1.8						
REPLAY	0	0.8	0	0	0.5	0.8	0	1.8	1.8	4.7	0	0	0	1.8						
F.F	0	0.8	0	0	0.5	0.8	0	1.8	1.8	4.7	0	0	0	1.8						

REF. NO.	IC6004																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	4.7	4.7	4.7	4.7	4.7	4.6	4.7	4.7	0	4.7	0	4.7	4.7	4.7	4.7	—	0	0	0	0
REPLAY	4.7	4.7	4.7	4.6	4.7	4.6	4.7	4.7	0	0	0	4.7	4.7	4.7	4.7	—	4.7	4.7	4.7	4.2
F.F	4.7	4.8	4.7	4.7	4.7	4.5	4.7	4.7	0	4.7	0	4.7	4.7	3.6	4.7	0	0	0	0	0

REF. NO.	IC6004																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	0	1.9	0	4.7	0	0	4.7	0.8	0	0	1	0.1	4.7	0	0	0	—	—	0
REPLAY	0	0	1.9	0	4.7	0	0	4.7	0.8	0	0	1	0.1	4.7	0	0	0	—	—	0
F.F	0	0	1.9	0	4.7	0	0	4.7	0.8	0	0	1	0.1	4.7	0	0	0	0.1	4.7	0

REF. NO.	IC6004																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	2.1	0.8	1.0	0	0	0.8	4.7	—	—	4.2	0	43	4.6	4.5	4.7	4.7	4.7	2.2	4.6	4.7
REPLAY	0	2.1	1.0	0	0	0.8	4.7	—	0.3	—	—	44	4.5	4.5	4.7	4.7	4.7	0	4.6	4.7
F.F	0	0.8	1.0	0	0	0.8	4.7	4.7	0	4.7	0	44	4.6	4.4	4.7	4.7	4.6	0	4.6	4.7

REF. NO.	IC6004																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0	0	4.7	0	4.7	0	0	4.7	2.3	0	4.7	1	0	0	2.4	2.4	2.3	0	2.4	2.4
REPLAY	0	0	—	0	—	0	0	4.7	2.3	0	1.9	1	0	0	2.4	2.3	2.3	0	2.4	2.4
F.F	0	0	4.7	0	4.7	0	0	4.7	2.3	0	2.3	1	0	0	2.4	2.4	2.3	0	2.4	2.4

REF. NO.	IC6004																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	2.1	2.6	4.7	0	0	0	2.4	2.4	0	0	2.4	1	0	4.1	4.7	0	4.7	4.7	4.7	4.7
REPLAY	2.1	2.6	4.7	0	—	0	2.4	2.3	0	0	2.4	1	2.1	2.3	4.7	0	4.6	4.7	4.7	4.6
F.F	2.1	2.6	4.7	0	0	0	2.4	2.4	0	0	2.4	1	1.9	4.1	4.7	0	4.7	4.7	4.7	4.6

REF. NO.	IC6004																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
STOP	4.6	2.9	0	0	4.7	4.7	3.7	2.5	4.3	0	0	1	4.7	4.7	4.5	4.7	4.7	4.7	4.7	4.7
REPLAY	4.6	2.9	0	0	4.7	4.7	—	2.5	4.6	—	0	1	4.7	4.7	4.6	4.6	4.7	4.7	4.7	4.7
F.F	4.6	2.9	0	0	4.7	4.7	—	2.5	4.3	0	0	1	4.7	4.7	4.6	4.6	4.7	4.7	4.7	4.7

REF. NO.	IC6004																			
MODE	121	122	123	124	125	126	127	128												
STOP	4.7	4.7	4.7	0	0	4.7	4.7	0												
REPLAY	4.7	0	0	0	0	4.7	4.7	0												
F.F	4.7	4.7	4.7	0	0	4.7	4.7	0												

REF. NO.	IC6005																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0	4.7	4.7	4.7	4.3	4.7	0	0.5	4.7	4.7	4.7	4.7	0	4.7						
REPLAY	0	4.7	4.7	4.7	4.3	4.7	0	0.5	4.7	4.7	4.7	4.7	0	4.7						
F.F	0	4.7	4.7	4.7	4.7	4.7	0	0.5	4.6	4.7	4.6	4.8	0	4.7						

REF. NO.	IC6006																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	4.7	4.7	4.7	4.7	4.7	4.7	0	0	4.7	4.7	4.7	4.7	4.7	4.7						
REPLAY	4.7	4.7	4.7	4.7	4.7	4.7	0	0	4.7	4.7	4.7	4.7	4.7	4.7						
F.F	4.7	4.7	4.7	4.7	4.7	4.7	0	0	4.7	4.7	4.7	4.7	4.7	4.7						

REF. NO.	IC6007																			
MODE	1	2	3	4	5															
STOP	4.3	4.6	0	0.8	4.7															
REPLAY	4.3	4.6	0	0.8	4.7															
F.F	4.4	4.6	0	0.8	4.7															

REF. NO.	IC6008																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	4.7	4.7	4.7	4.7	4.7	4.7	0	4.7	4.7	4.7	4.7	4.7	4.7	4.7						
REPLAY	4.3	4.3	4.7	4.7	4.7	4.7	0	4.7	4.7	4.7	4.7	4.7	4.7	4.7						
F.F	4.7	4.6	4.7	4.7	4.6	4.7	0	4.7	4.7	4.7	4.7	4.7	4.7	4.7						

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART

REF. NO.	IC6009														IC6010					
MODE	1	2	3												1	2	3			
STOP	C	4.7	4.7												5.0	0	12.2			
REPLAY	C	4.7	4.7												5.0	0	12.1			
F.F	C	4.7	4.7												5.0	0	12.1			

REF. NO.	IC6011																			
MODE	1	2	3	4	5															
STOP	4.7	4.5	0	4.5	4.7															
REPLAY	4.7	4.6	0	4.6	4.7															
F.F	4.6	4.6	0	4.7	4.7															

SYSTEM CONTROL & SERVO TRANSISTORs DC VOLTAGE CHART

REF. NO.	Q6002			Q6003					Q6004			Q6005			Q6006		
MODE	E	C	B	1	2	3	4	5	E	C	B	E	C	B	E	C	B
STOP	0	12.2	0	1.8	1.8	0	0	0	4.7	4.7	4.0	0	0.1	0.7	0	4.6	6.1
REPLAY	0	12.1	0	1.8	1.8	0	0	0	4.7	4.7	4.6	0	0.1	0.7	0	4.7	6.1
F.F	1.8	10.9	1.5	1.8	1.8	0	0	0	4.7	4.7	4.0	0	0.1	0.7	0	4.6	6.1

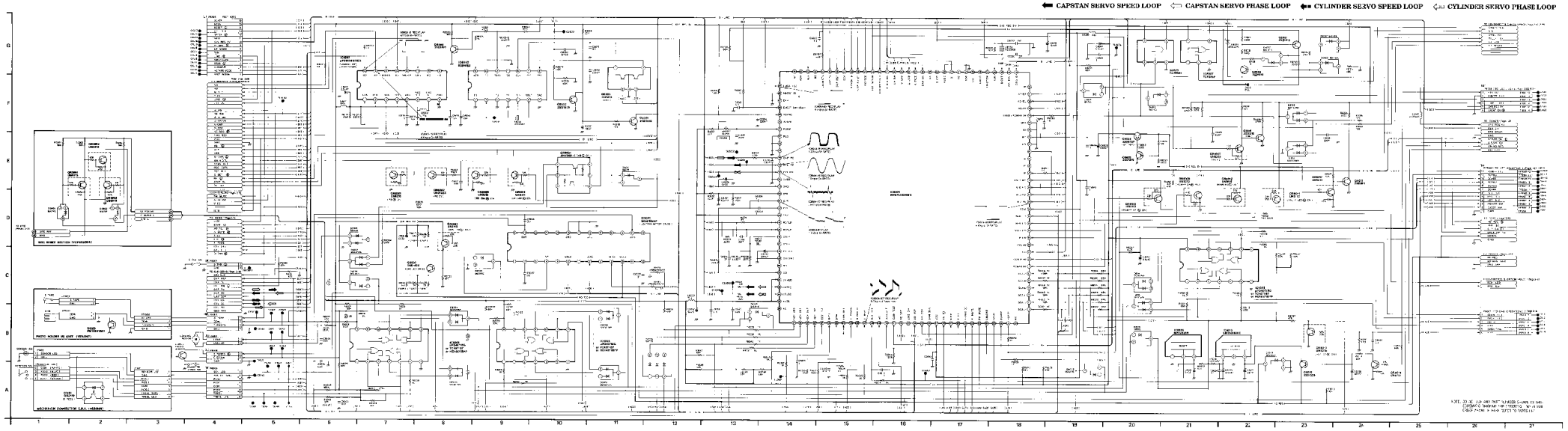
REF. NO.	Q6007			Q6008			Q6009			Q6010			Q6011			Q6012		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.7	0	4.7	3.1	0	0	5	4.9	6	9.5	12.2	10.4	0	4.6	0			
REPLAY	4.7	0	4.7	3.1	3.9	0	0	4.7	0.1	9.5	12.0	10.2	0	4.6	0			
F.F	4.7	0	4.7	3.1	4.0	0	0	4.8	0	9.7	12.0	10.2	0	4.6	0			

REF. NO.	Q6100			Q6200			Q6400			Q6404			Q6405		
MODE	1	C	B	E	C	B	E	C	B	1	2	3	4	5	6
STOP	C	0.1	0	4.7	0.1	4.7	0	0	0	4.7	4.0	4.7	4.7	4.1	4.7
REPLAY	C	0	0.4	4.7	1.6	4.7	0	4.7	0.1	4.7	4.6	4.7	4.6	4.1	4.7
F.F	C	0	C	4.7	0.1	4.7	D	4.7	1.6	4.7	4.0	4.7	4.7	4.1	4.7

REF. NO.	Q6406			Q6407			Q6408			Q6409			Q6410			Q6411			Q6412		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0	0	0	0.1	4.5	0	0.1	4.7	4.7	4.6	0	4.7	0	0	4.7	0	4.7	4.7	0	4.7
REPLAY	0	4.7	0	0	0.1	4.5	0	0.1	4.7	4.7	4.6	0	4.7	0	0	4.7	0	4.7	4.7	0	4.7
F.F	C	4.7	0	0	0.1	4.5	0	0.1	4.7	4.7	4.6	0	4.7	0	0	4.7	0	4.7	4.7	0	4.7

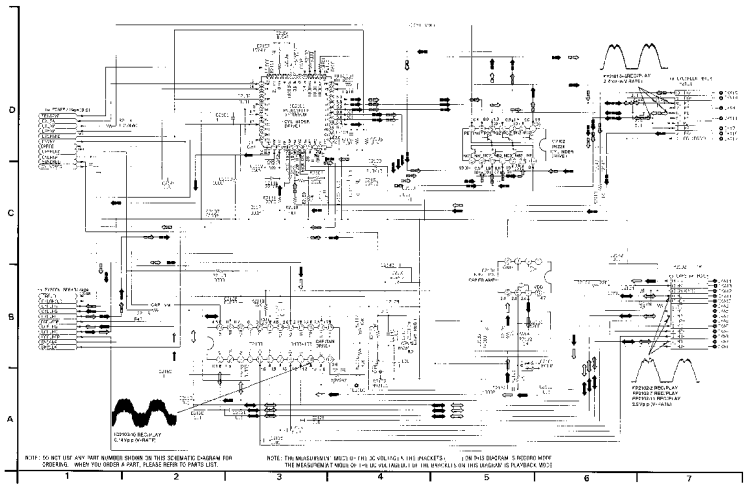
REF. NO.	QR501			QR6014			QR6015			QR6016			QR5017			QR5018		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0	12.5	0	0	0	0	0	0	0	0	0	0	0	4.6	0	0	2.1
REPLAY	0	0	12.5	0	0	4.7	0	0	4.7	0	0	0	0	0	4.5	0	0	2.1
F.F	0	0	12.4	0	0	0	0	0	0	0	0	0	0	0	4.5	0	0	2.1

3-18. SYSTEM CONTROL/SERVO & VITC RESET SCHEMATIC DIAGRAM



3-19. SUB SERVO SCHEMATIC DIAGRAM

⬅ CAPSTAN SERVO SPEED LOOP ⬅ CYLINDER SERVO SPEED LOOP
⇦ CAPSTAN SERVO PHASE LOOP ⇦ CYLINDER SERVO PHASE LOOP



NOTE : DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE : THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS IN THIS DIAGRAM IS RECORD MODE. THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

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SYSTEM CTL & SERVO Section

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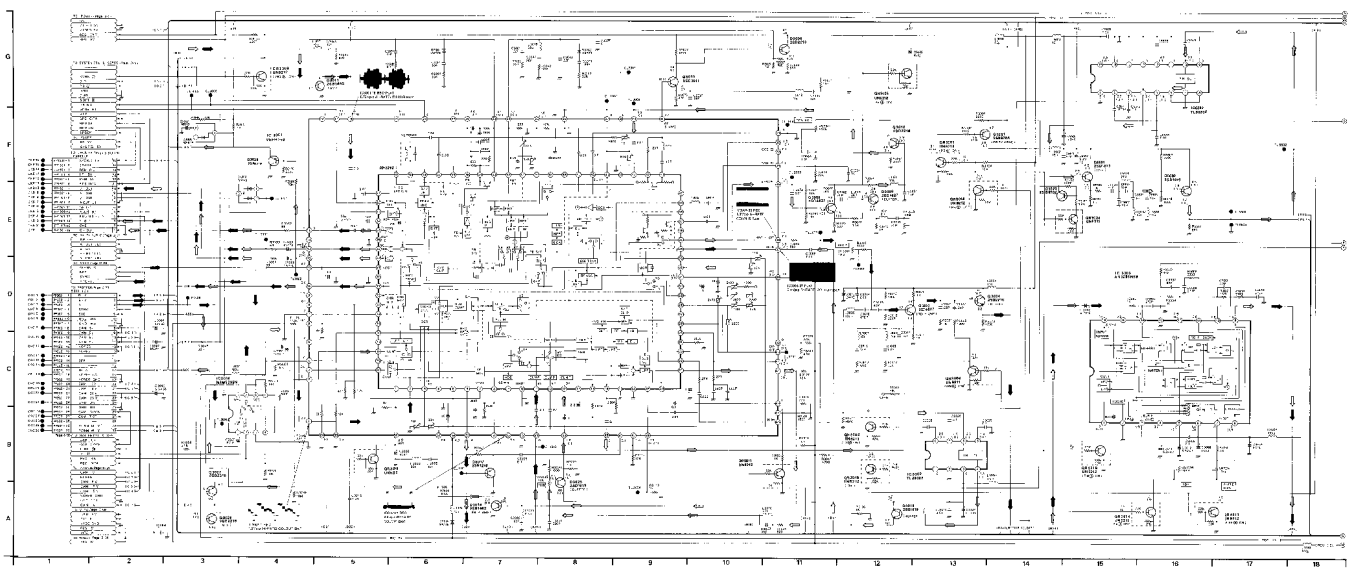
3-20. LUMINANCE/CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM

⬅ MAIN SIGNAL PATH IN REC MODE ⇦ MAIN SIGNAL PATH IN PLAYBACK MODE



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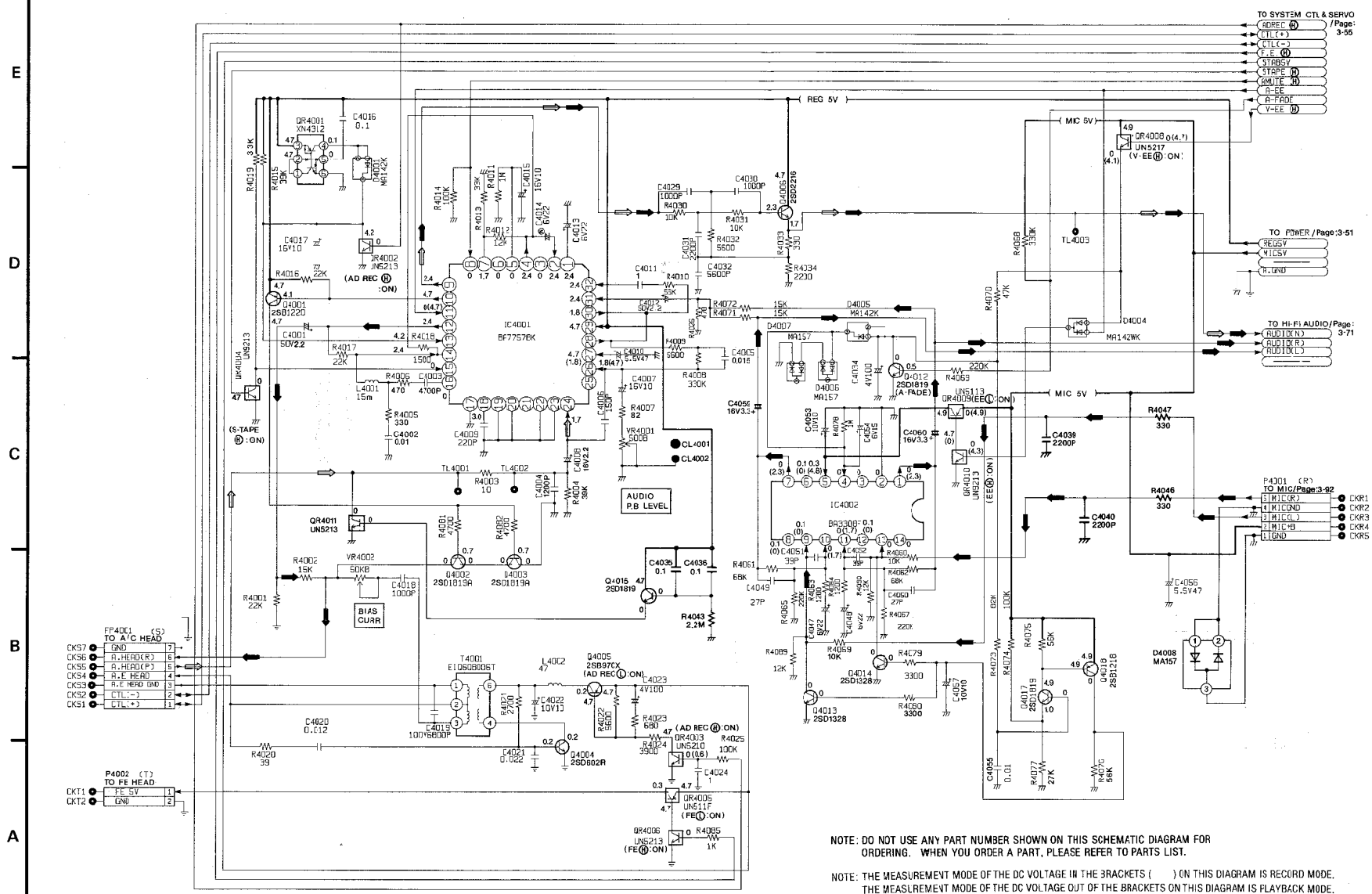
3-23. AUDIO SCHEMATIC DIAGRAM

⬅ MAIN SIGNAL PATH IN REC MODE ⇦ MAIN SIGNAL PATH IN PLAYBACK MODE

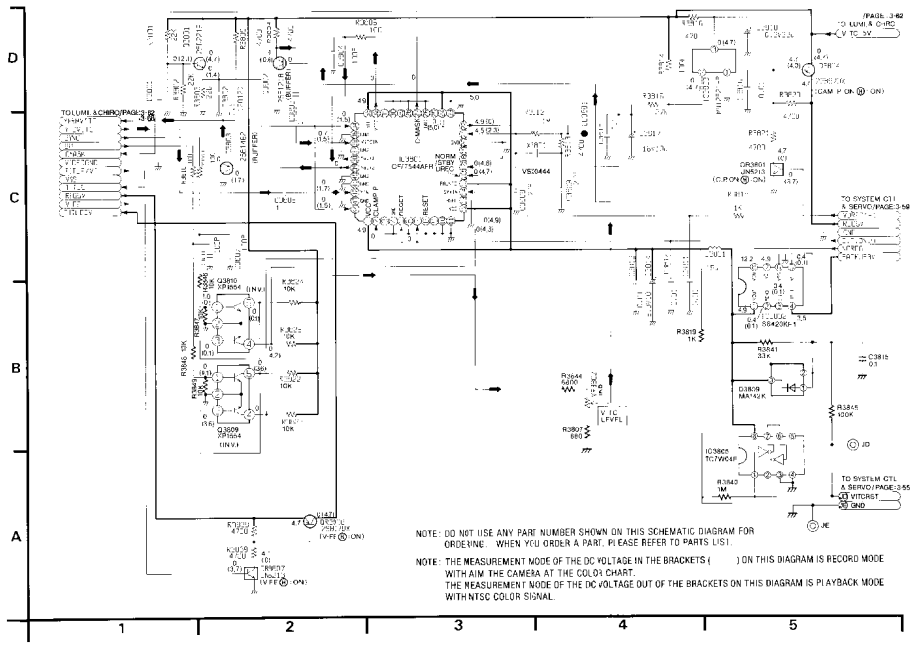


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE. THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

3-21. VITC SCHEMATIC DIAGRAM

⬅ MAIN SIGNAL PATH IN REC MODE



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOR CHART.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH NTSC COLOR SIGNAL.

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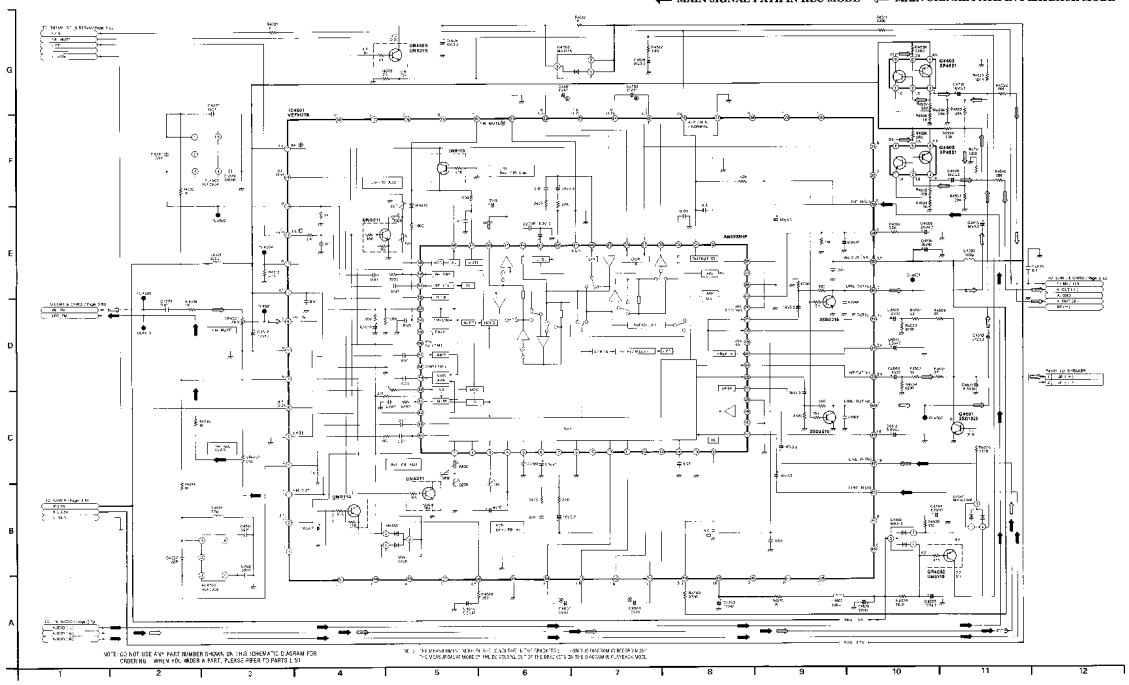
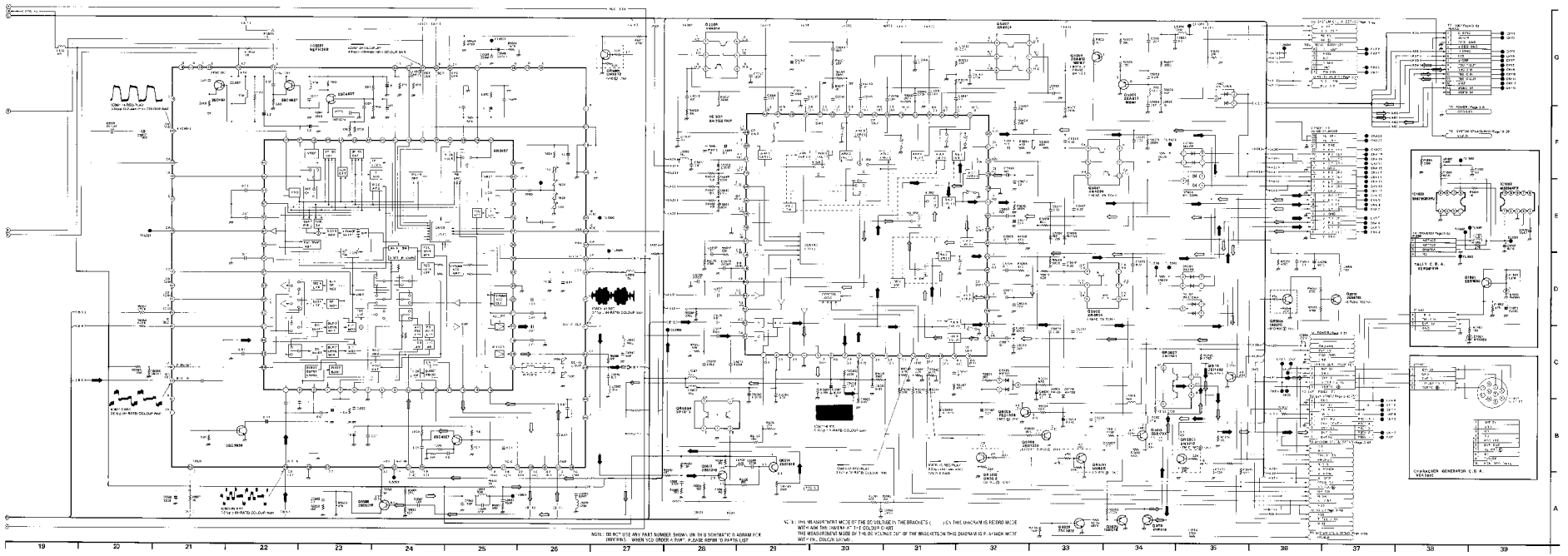
LUMI/CHRO & HA Section

3-22. Hi-Fi AUDIO SCHEMATIC DIAGRAM

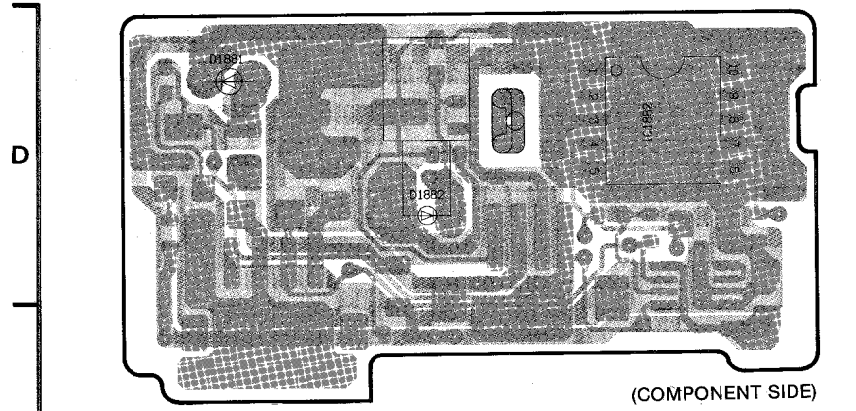
⬅ MAIN SIGNAL PATH IN REC MODE ⇦ MAIN SIGNAL PATH IN PLAYBACK MODE





3—65 3—66 3—67 3—68

3-24. TALLY C.B.A. (VEP26181A)



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AUDIO Section

MAIN C.B.A. ADDRESS INFORMATION

LUMINANCE/CHROMINANCE & HEAD AMP Section	
Transistor	
Q3001	D-22
Q3004	D-21
Q3006	F-20
Q3008	E-21
Q3009	E-21
Q3010	E-3
Q3011	G-22
Q3012	E-21
Q3014	D-21
Q3016	F-22
Q3017	D-3
Q3018	F-20
Q3019	G-3
Q3020	G-3
Q3021	G-3
Q3022	C-2
Q3025	F-2
Q3026	D-20
Q3027	E-20
Q3028	E-21
Q5001	B-20
Q5002	A-21
Q5003	B-20
Q5004	A-4
Q5005	A-5
Q5006	B-20
Q5007	B-20
Q5008	B-19
Q5009	A-20
Q5010	B-19
Q8001	F-5
Q8002	E-6
Q8009	F-18
Q8013	E-6
Q8014	E-18
Transistor & Resistor	
QR3001	D-22
QR3002	D-2
QR3004	D-21
QR3009	E-20
QR3013	D-21
QR3014	D-2
QR3016	D-22
QR3018	D-3
QR3019	D-2
QR3023	F-4
QR3024	C-2
QR3025	F-2
QR3206	C-3
QR5001	C-19
QR5002	B-3
QR5003	C-3
QR5004	C-21
QR5005	B-19

Integrated Circuit	
IC3001	E-3
IC3002	F-21
IC3003	D-22
IC3004	D-5
IC5001	B-3
IC8001	E-5
IC8002	F-19
Test Point	
CL3001	E-3
CL3002	E-3
CL3003	E-3
CL3004	E-4
CL3005	E-4
CL3006	E-4
CL3007	E-3
CL3008	E-3
CL3009	E-2
CL3010	D-3
CL3011	D-4
CL3012	E-3
CL50C1	B-4
CL80C1	E-5
CL80C2	F-6
CL80C3	E-5
CL8004	F-6
TL3001	C-5
TL3002	D-5
TL3003	E-2
TL3004	D-3
TL3005	D-19
TL3006	E-22
TL5001	A-3
TL5002	A-3
TL5003	A-3
TL5004	D-6
TL8001	F-5
TL8004	E-6
TL8005	E-5
TL8006	E-5
TL8007	E-5
Adjustment	
VR3001	D-2
VR3004	D-3
VR3005	F-2
VR3006	D-3
VR3007	E-3
VR8001	E-5
Connector	
B3001	E-22
B5001	C-4
FP3001	B-6
FP5001	A-3
P3001	G-2
P3002	G-4

ADDRESS INFORMATION

SUB SERVO Section	
Transistor	
Q2101	B-11
Integrated Circuit	
IC2101	B-14
IC2102	A-14
IC2103	B-13
IC2104	B-13
Test Point	
CL2101	B-9
TL2101	B-11
Connector	
FP2101	A-9
FP2102	A-11

ADDRESS INFORMATION

SYSTEM CONTROL & SERVO Section	
Transistor	
Q6002	D-13
Q6003	C-16
Q6004	C-10
Q6005	C-10
Q6006	A-17
Q6007	C-10
Q6008	C-10
Q6009	C-10
Q6010	F-16
Q6012	B-17
Transistor & Resistor	
QR6001	C-18
QR6002	C-19
QR6003	D-18
QR6004	D-19
QR6005	C-13
QR6007	A-17
QR6008	E-8
QR6010	D-14
QR6011	E-17
QR6012	B-17
QR6013	D-11
QR6015	D-17
QR6017	B-17
QR6018	E-16
Integrated Circuit	
IC6001	C-13
IC6002	C-14
IC6003	C-13
IC6004	D-8
IC6005	D-14
IC6006	D-13
IC6007	C-17
IC6008	D-14
IC6009	F-17
IC6010	F-17
IC6011	D-6
Test Point	
CL6004	D-7
CL6005	D-7
CL6201	D-6
CL6202	C-9
CL6203	C-9
CL6204	B-10
CL6205	C-10
CL6206	B-7
TL6001	E-7
TL6002	E-7
TL6003	D-4
TL6004	D-7
TL6005	D-7
TL6006	C-8
TL6007	C-10
Adjustment	
VR6201	C-9
Connector	
B6001	E-8
FP6001	G-11
P6001	F-11
P6004	A-7
P6005	G-6
P6006	D-1
P6007	G-5
P6008	C-11
P6009	D-11

ADDRESS INFORMATION

VITC Section	
Transistor	
Q3801	B-22
Q3802	B-1
Q3803	B-22
Q3804	C-2
Q3808	C-22
Q3809	B-22
Q3810	C-22
Transistor & Resistor	
QR3801	C-1
QR3807	C-22
Test Point	
CL3801	A-1
Integrated Circuit	
IC3801	B-22
IC3802	B-22
IC3803	B-2
IC3805	C-21
Adjustment	
VR3802	A-2

ADDRESS INFORMATION

AUDIO Section	
Transistor	
Q4001	B-15
Q4002	A-16
Q4003	A-16
Q4004	A-15
Q4005	A-15
Q4006	B-15
Q4010	B-16
Q4012	F-7
Q4013	G-17
Q4014	F-17
Q4015	A-16
Q4017	F-7
Q4018	F-7
Transistor & Resistor	
QR4001	B-15
QR4002	B-15
QR4003	A-16
QR4004	B-16
QR4005	A-16
QR4006	A-16
QR4008	F-7
QR4009	F-7
QR4011	A-16
Integrated Circuit	
IC4001	B-16
IC4002	F-17
Test Point	
CL4001	B-8
CL4002	B-8
TL4001	B-8
TL4002	A-7
TL4003	B-7
Adjustment	
VR4001	B-8
VR4002	B-8
Connector	
FP4001	A-8
P4001	G-6
P4002	C-1

ADDRESS INFORMATION

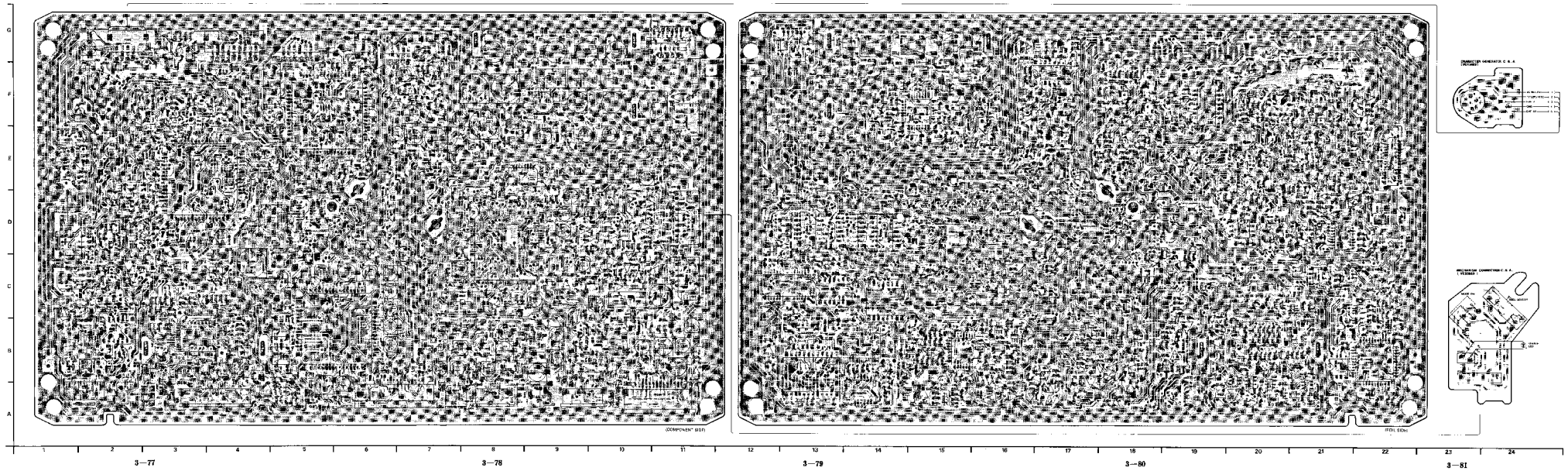
POWER Section	
Transistor	
Q1001	G-14
Q1002	E-13
Q1003	G-15
Q1004	G-14
Q1005	F-13
Q1006	E-16
Q1061	G-15
Q1062	G-16
Q1063	G-13
Transistor & Resistor	
QR1002	F-14
QR1006	F-14
QR1061	E-5
Integrated Circuit	
IC1001	F-5
IC1102	E-6
Test Point	
CL1007	G-9
CL1008	G-9
CL1009	G-10
TL1001	E-9
TL1002	E-9
TL1003	E-10
TL1004	E-10
TL1005	E-10
TL1006	E-10
TL1007	E-14
TL1008	E-10
TL1009	E-14
Adjustment	
VR1001	F-9
VR1002	F-9
VR1003	E-8
Connector	
P1001	G-11

ADDRESS INFORMATION

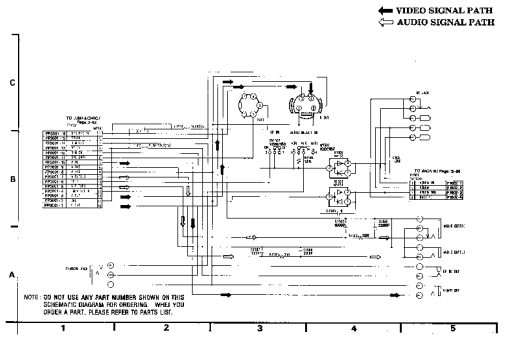
Hi-Fi AUDIO Section	
Transistor	
Q4501	B-18
Transistor & Resistor	
QR4502	B-18
QR4505	B-18
Integrated Circuit	
IC4501	B-6
Test Point	
CL4501	B-7
CL4502	B-6
CL4503	C-5
CL4505	C-5
TL4501	C-5
TL4502	A-5
TL4504	B-5
Adjustment	
VR4501	C-5
VR4502	C-5

ADDRESS INFORMATION

3-25. MAIN (POWER/SYSTEM CONTROL & SERVO, SUB SERVO, LUMINANCE/CHROMINANCE & HEAD AMP, VITC, Hi-Fi AUDIO and AUDIO Section) C.B.A. (VEP03D30A)

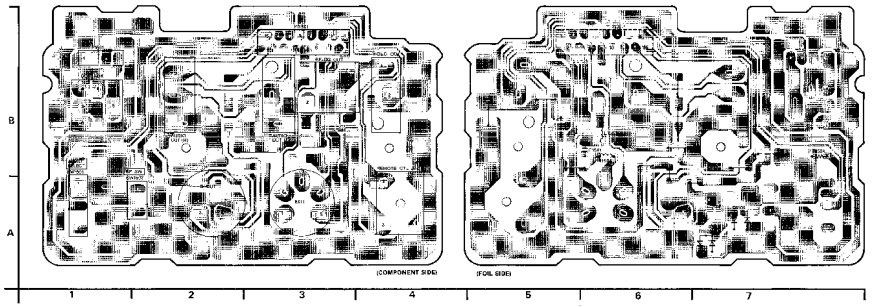


3-26. AV JACK (A) SCHEMATIC DIAGRAM

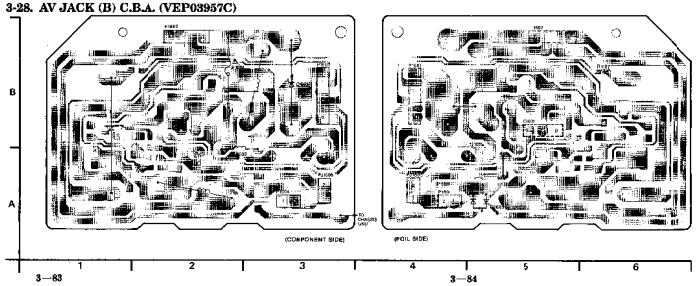

VIDEO SIGNAL PATH
AUDIO SIGNAL PATH
NOTE : DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

Back Page: MAIN C.B.A. Section

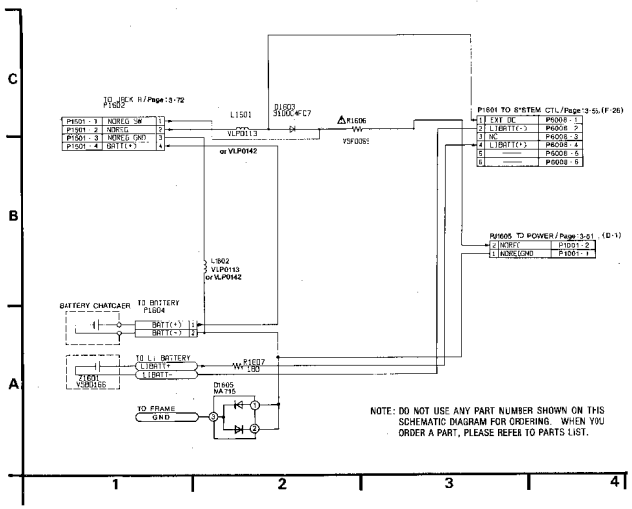
3-27. AV JACK (A) C.B.A. (VEP03D37A)



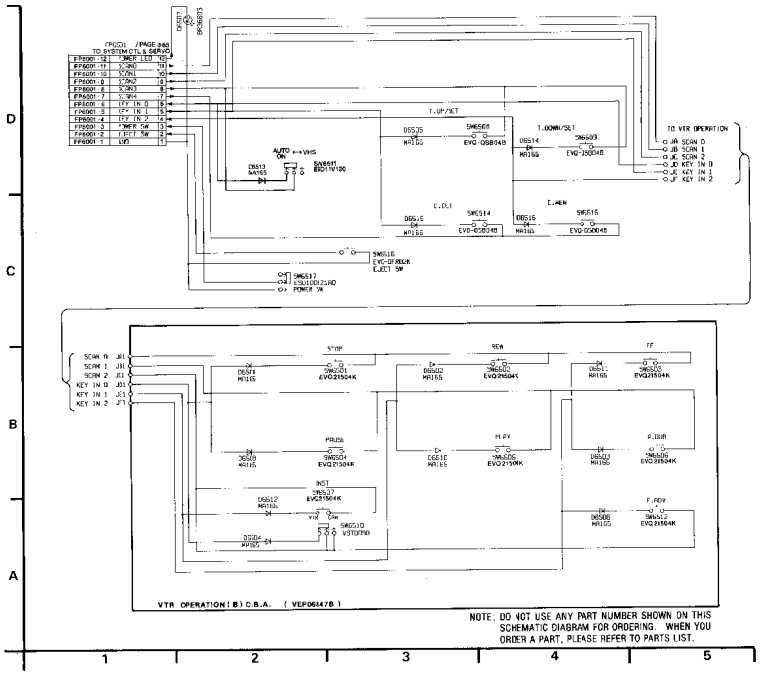
3-28. AV JACK (B) C.B.A. (VEP03957C)



3-29. AV JACK (B) SCHEMATIC DIAGRAM

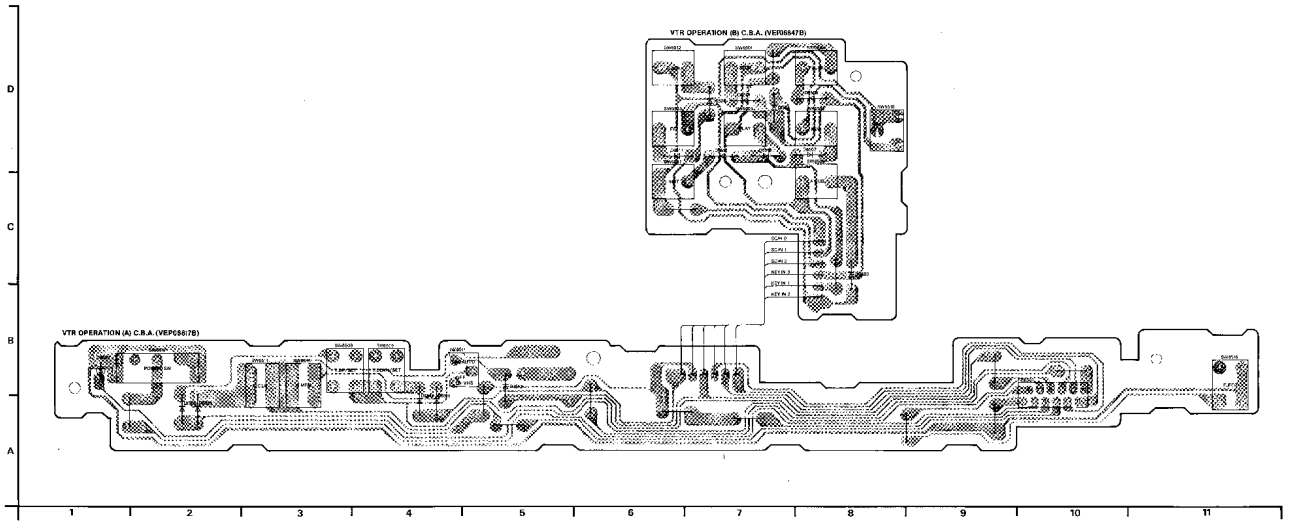


3-30. VTR OPERATION SCHEMATIC DIAGRAM



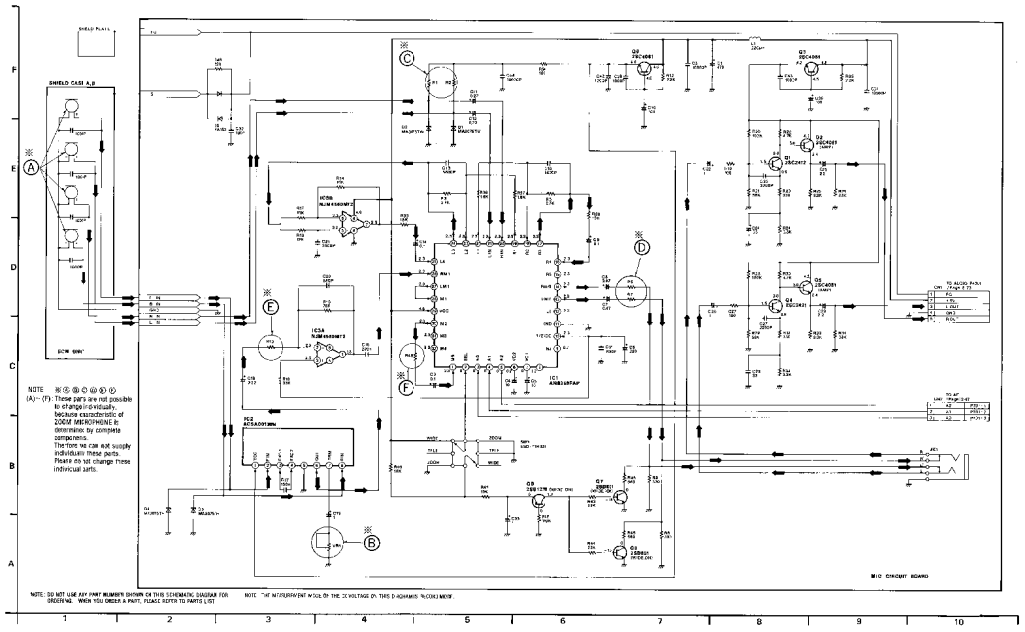
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-31. VTR OPERATION (A) C.B.A. (VEP06817A) & VTR OPERATION (B) C.B.A. (VEP06847B)



3-32. MIC SCHEMATIC DIAGRAM

⬅ MAIN SIGNAL PATH IN REC MODE


SHIELD PLATE
SHIELD CASE A_B
SCW SW
MIC CIRCUIT BOARD
IC1 AN8358FAP
IC2 ACSA0013BN
TO ALC/D (VR1)
TO AF
NOTE
(A)~(F): These parts are not possible to change individually because characteristic of 22KΩ MIC/PHONE is determinex by complete components.
The fore we can not supply individualli these parts.
Please do not change these individual parts.
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE: THE INTERMITTENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS CONTINUOUS.

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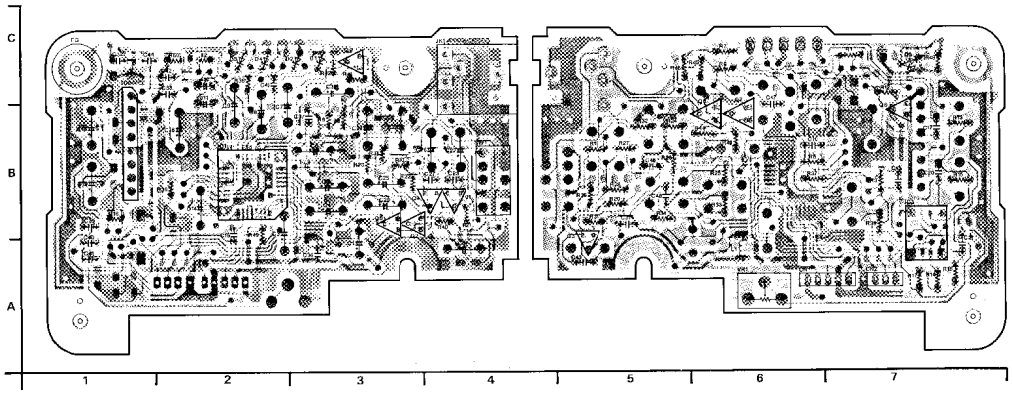
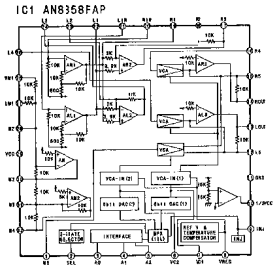
VTR OPERATION Section

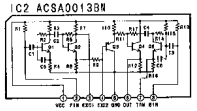
3-33. MIC C.B.A. (VEK5863)



IC1 AN8358FAP

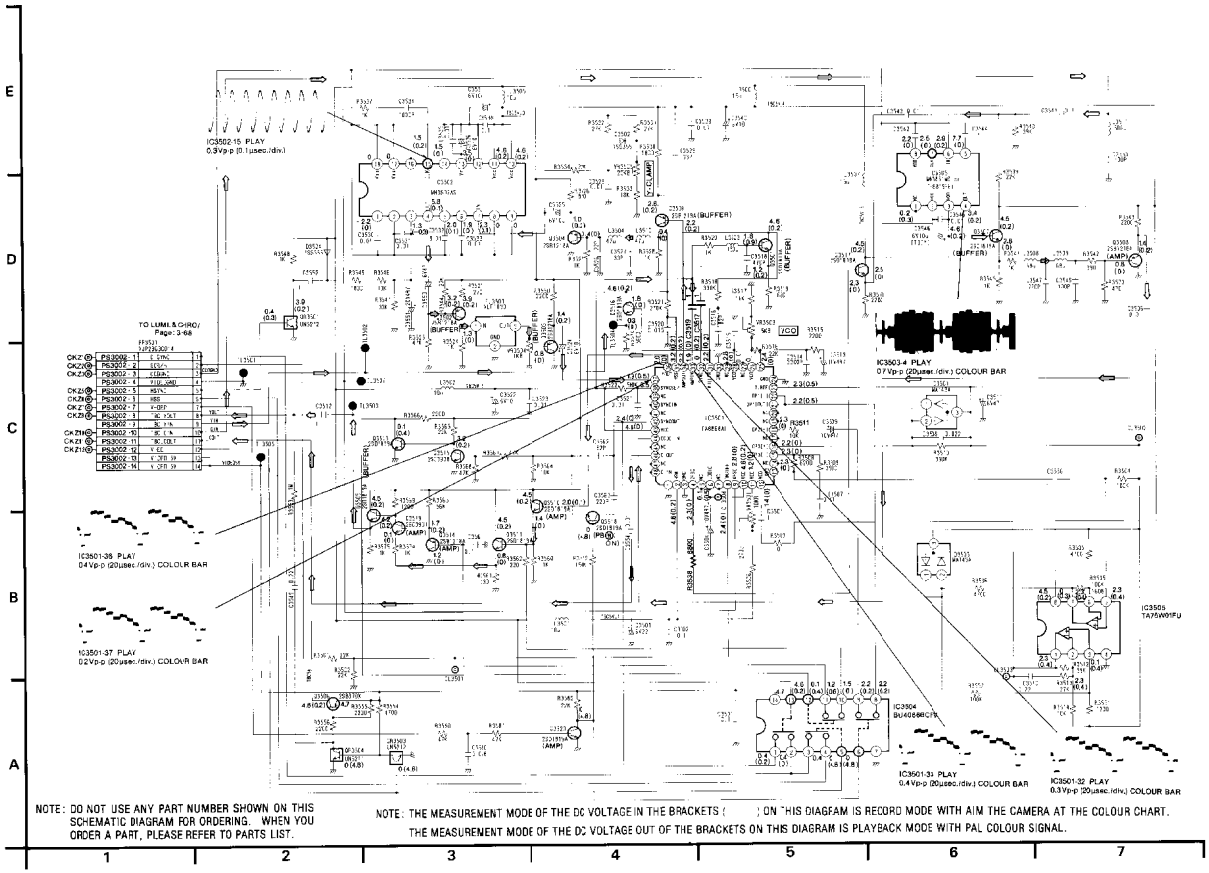


IC2 ACSA0013BN



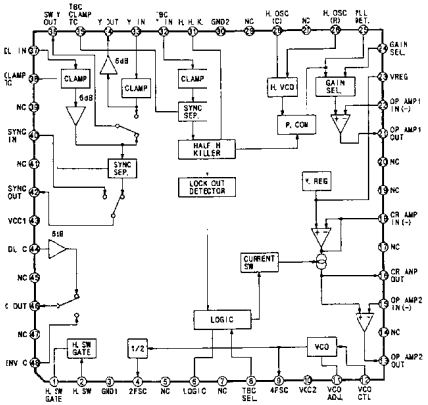
3-34. TBC SCHEMATIC DIAGRAM

⇦ MAIN SIGNAL PATH IN PLAYBACK MODE

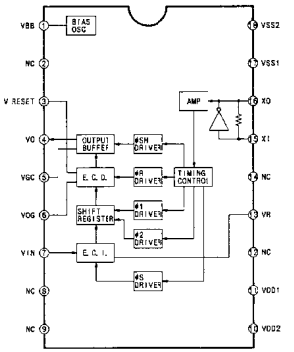

IC3502-15 PLAY
0.3Vp-p (0.1 μsec./div.)
TO LUMI & CHRO/
Page: 3-68
IC3501-35 PLAY
0.4Vp-p (20 μsec./div.) COLOUR BAR
IC3501-37 PLAY
0.2Vp-p (20 μsec./div.) COLOUR BAR
IC3503-4 PLAY
0.7Vp-p (20 μsec./div.) COLOUR BAR
IC3501-31 PLAY
0.4Vp-p (20 μsec./div.) COLOUR BAR
IC3501-32 PLAY
0.3Vp-p (20 μsec./div.) COLOUR BAR
IC3505
TA75W01FU
IC3504
BU4066BCFV
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.
E
D
C
B
A
1
2
3
4
5
6
7

IC BLOCK

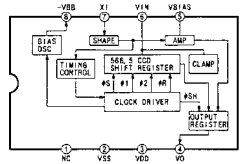
IC3501 (TA8868AF)
(LOCATION: D-4)



IC3502 (MN3802AS)
(LOCATION: E-7)



IC3503 (MN3851MS)
(LOCATION: E-5)



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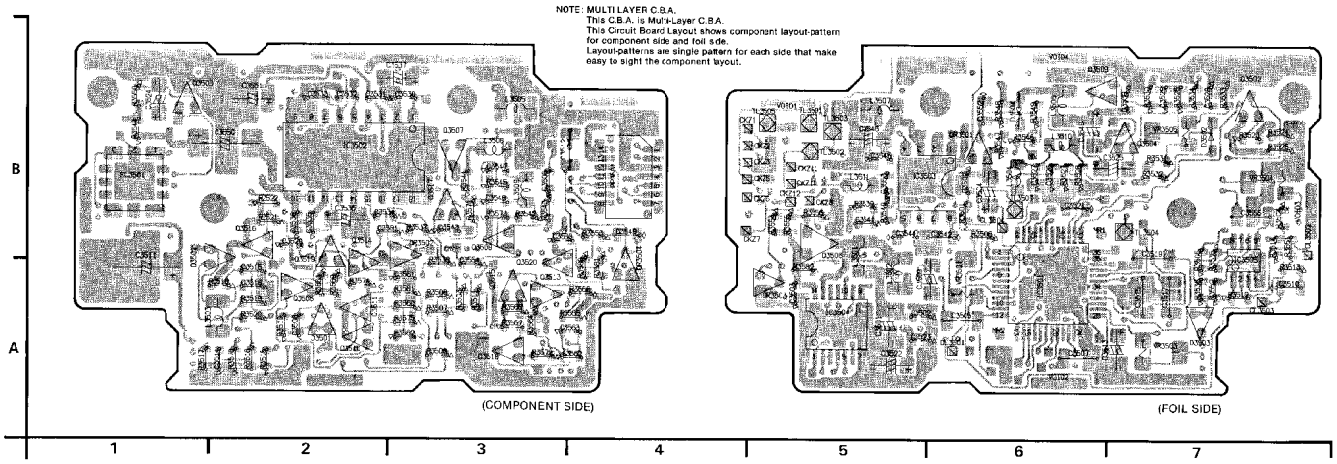
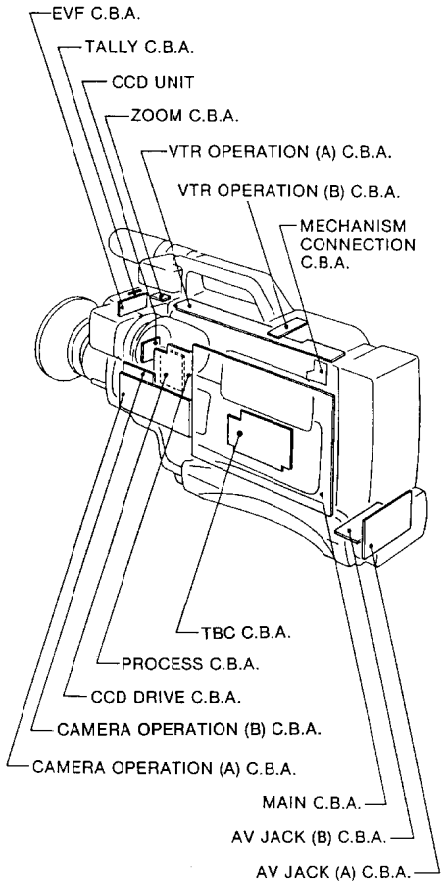
TBC C.B.A. Section

3-35. TBC C.B.A. (VEP03D31A)



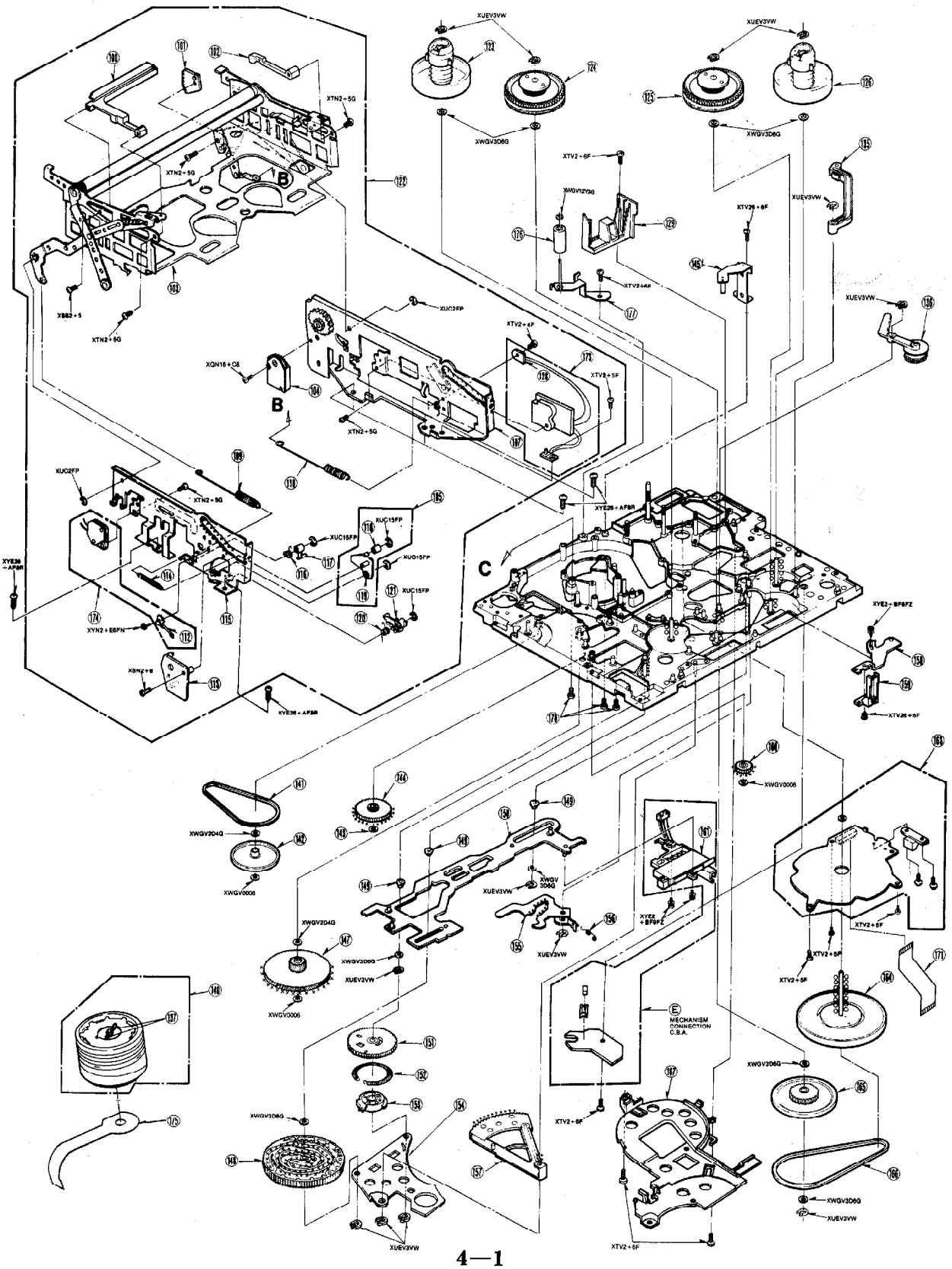
3-36. CIRCUIT BOARD LAYOUT



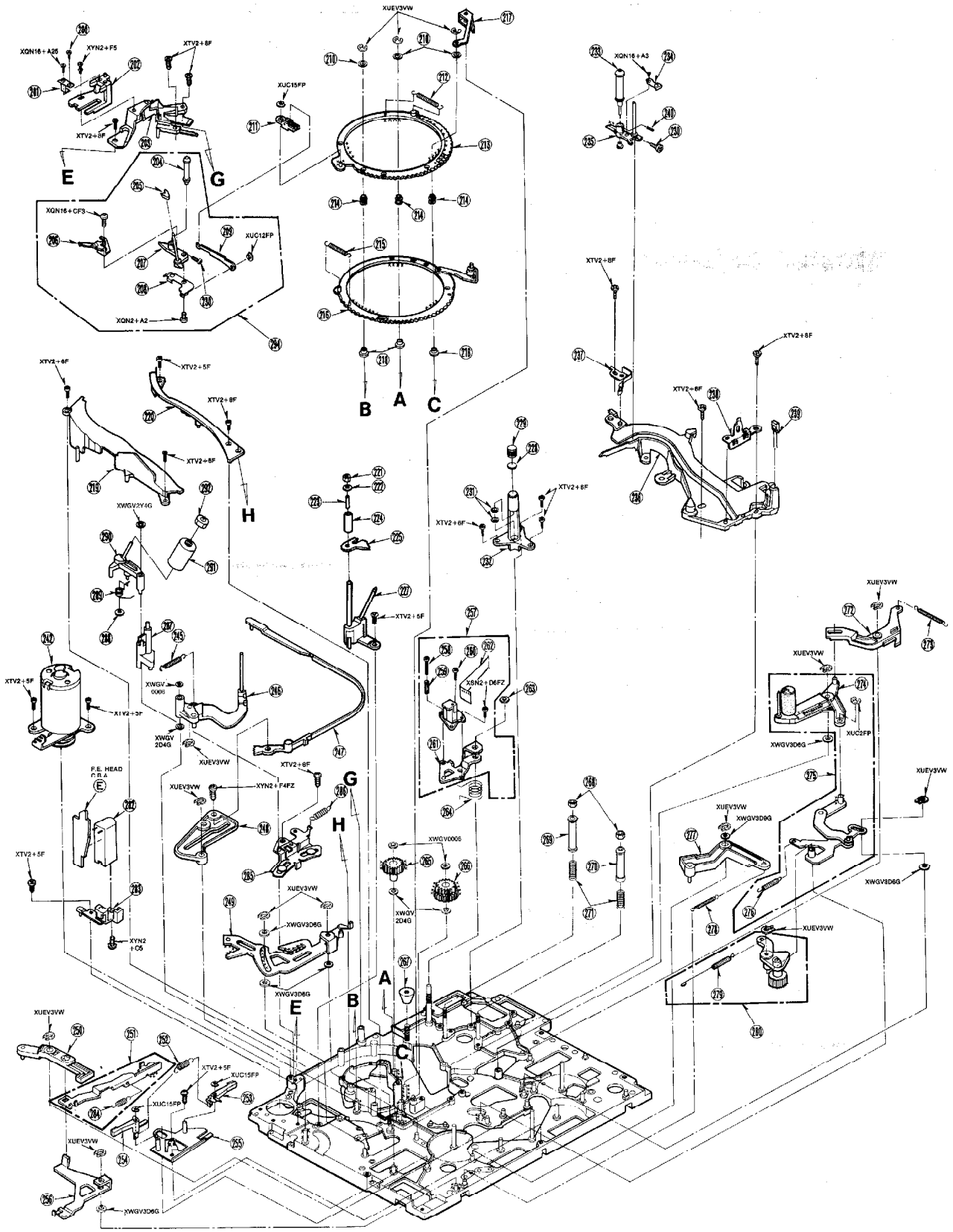
SECTION 4
EXPLODED VIEWS & PARTS LISTS

4-1. EXPLODED VIEWS

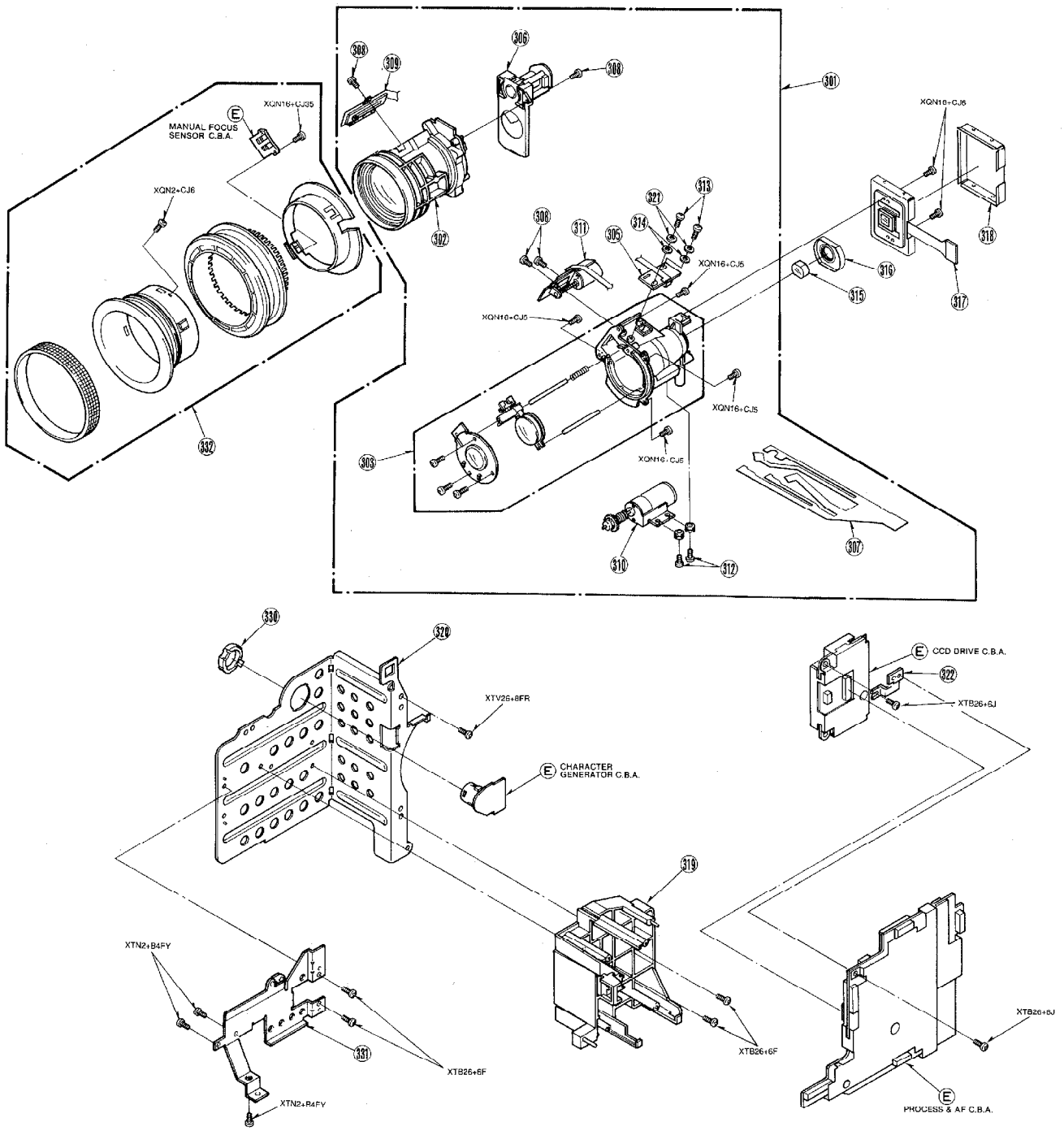
❶ VTR MECHANISM SECTION (1)



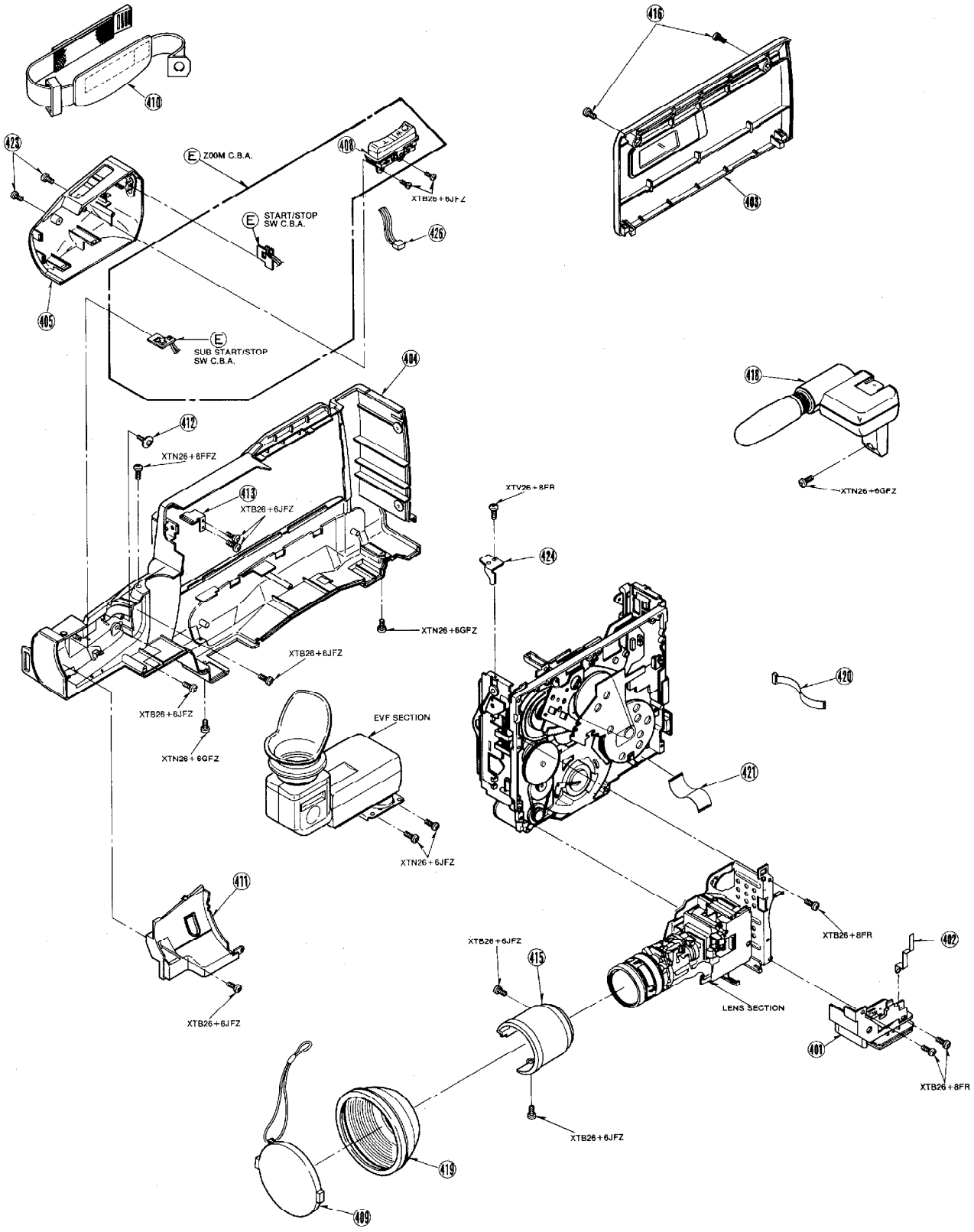
❷ VTR MECHANISM SECTION (2)



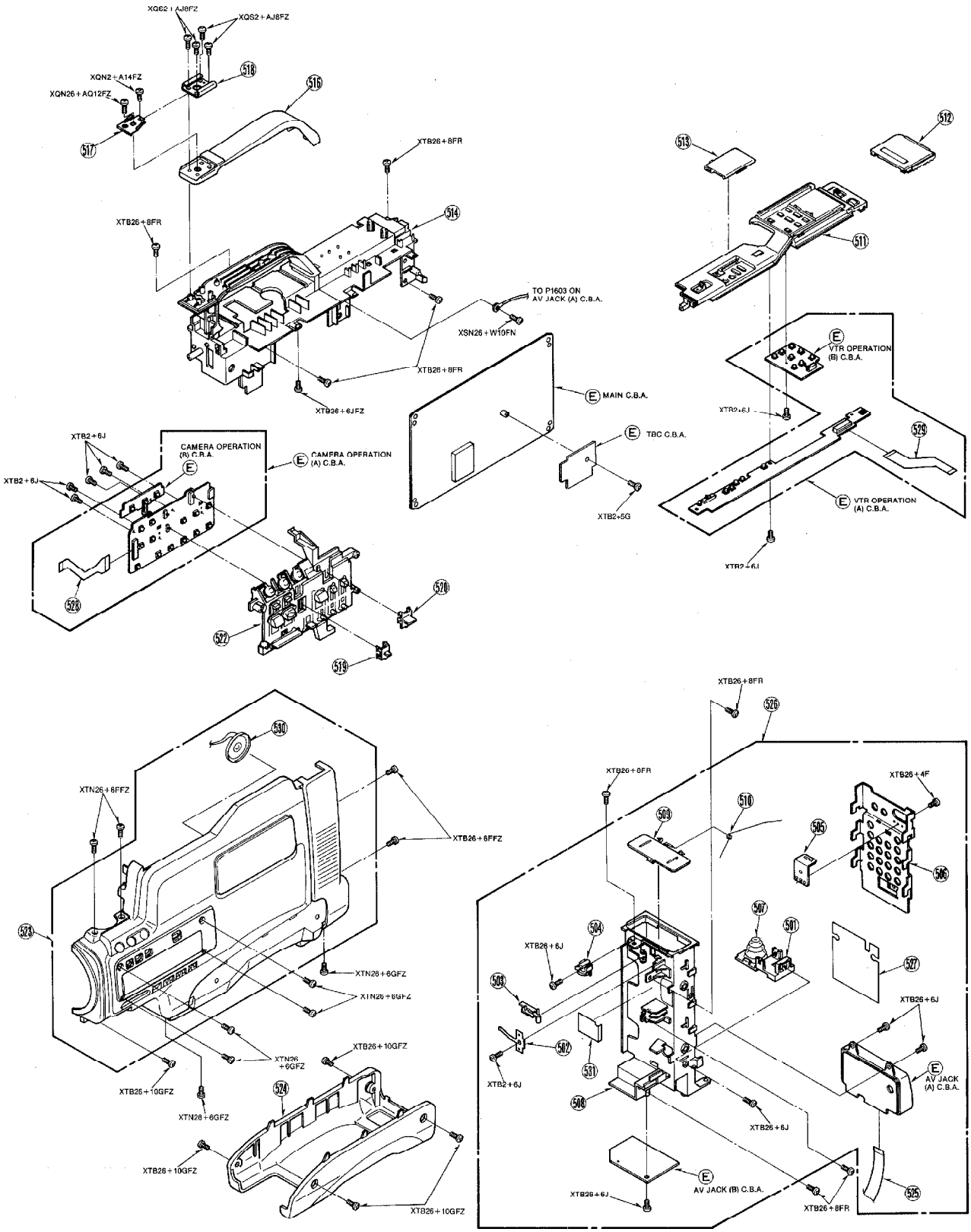
❸ CAMERA LENS SECTION



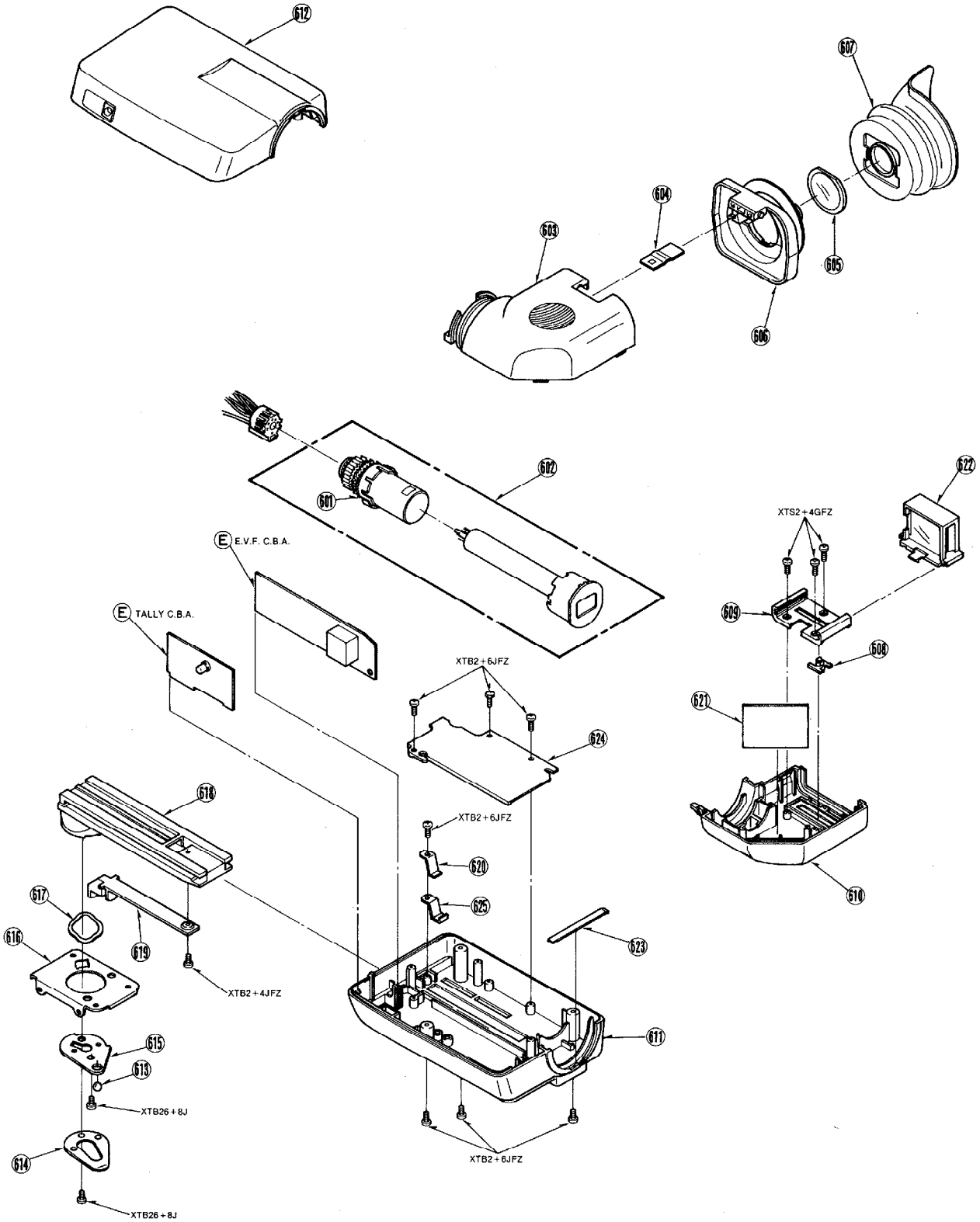
❹ FRAME & CASING PARTS SECTION (1)



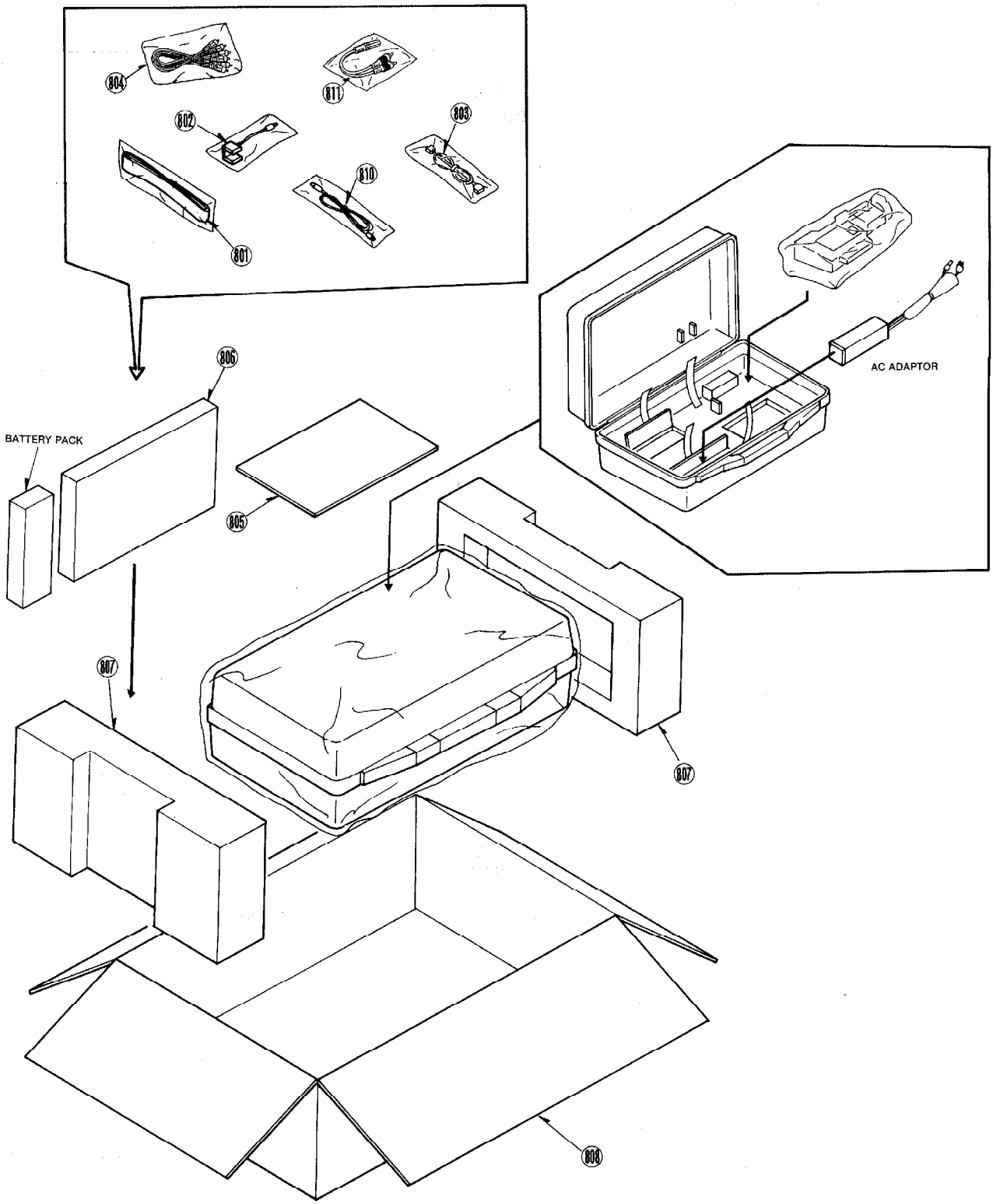
❺ FRAME & CASING PARTS SECTION (2)



❻ EVF SECTION



❼ PACKING PARTS & ACCESSORIES SECTION



4-2. MECHANICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
100(1)	VMD0954	CASSETE GUIDE (L)	1	
101(1)	VDG0610	MAIN ARM GEAR (A)	1	
102(1)	VMD0953	CASSETTE GUIDE (R)	1	
103(1)	VXA4856	CASSETTE HOLDER UNIT	1	
104(1)	VXP1139	DAMPER UNIT	1	
105(1)	VXL1984	LOCK LEVER UNIT	1	
107(1)	VXA3863	STAND (R) UNIT	1	
109(1)	VMB1329	HOLDER SPRING (L)	1	
110(1)	VMB1621	HOLDER SPRING (R)	1	
112(1)	VSH0026	LEAF SW	1	
113(1)	VMD0952	LEAF SW COVER (O)	1	
114(1)	VMB1330	LOCK BOARD SPRING	1	
115(1)	VXA3023	STAND (L) UNIT	1	
116(1)	VMB1453	LOCK LEVER (B) SPRING	1	
117(1)	VML1650	LOCK LEVER (B)	1	
118(1)	VDP1096	LOCK ROLLER (O)	1	
119(1)	VXL1648	LOCK BOARD UNIT	1	
120(1)	VMB1331	LOCK LEVER (A) SPRING	1	
121(1)	VML1649	LOCK LEVER (A)	1	
122(1)	VXA4832	CASSETE UP (O) UNIT	1	
123(1)	VXR0200	SUPPLY REEL TABLE	1	
124(1)	VXP0900B	SUPPLY CLUTCH UNIT	1	
125(1)	VXP0901B	TAKE-UP CLUTCH UNIT	1	
126(1)	VXR0201	TAKE-UP REEL TABLE	1	
128(1)	VSQ0808	DEW DETECTOR UNIT	1	
129(1)	VGQ0888	CASSETTE OPENER	1	
135(1)	VXZ0246	SOFT BRAKE (T) UNIT	1	
136(1)	VXP0899B	DRIVE GEAR ARM UNIT	1	
137(1)	VHD0593	CYLINDER UNIT SCREW	2	
140(1)	VEG1102	CYLINDER UNIT	1	
141(1)	VDV0167	LOADING BELT	1	
142(1)	VDG0370	INTERMEDIATE PULLEY GEAR	1	
143(1)	VMX0653	CUT WASHER	1	
144(1)	VUG0372	DRIVE GEAR (B)	1	
145(1)	VXS0123	EARTH BRUSH UNIT	1	
147(1)	VDG0371	DRIVE GEAR (A)	1	
148(1)	VDG0202	CAM GEAR	1	
149(1)	VMX0388	THRUST WASHER	3	
150(1)	VXL1654	MAIN ROD (K) UNIT	1	
151(1)	VDG0211	LOADING GEAR (C) (2)	1	
152(1)	VMB1324	LOADING GEAR (C) SPRING	1	
153(1)	VDG0210	LOADING GEAR (C) (1)	1	
154(1)	VMA7228	GUARD PLATE	1	
155(1)	VML1707	DRIVE ARMKICK LEVER	1	
156(1)	VMB1388	DRIVE ARMKICK LEVER SPRING	1	
157(1)	VXP0632	SECTOR GEAR UNIT	1	
158(1)	VMA6560	SAFETY TAB SW BASE	1	
159(1)	VSH0023	SAFETY TAB SW	1	
160(1)	VDG0207	DRIVE GEAR (C)	1	
161(1)	VSS0193	MODE SW	1	INCLUDED IN MECHA
				CONNECTION C.B.A.
				(VES0689)
163(1)	VEK5926	STATOR UNIT	1	
164(1)	VXP1355	ROTOR UNIT	1	
165(1)	VXP0897	MAIN PULLEY UNIT	1	
166(1)	VDV0155	CAPSTAN BELT	1	
167(1)	VMD0935	BELT COVER	1	
170(1)	VHD0682	CYLINDER SCREW	3	
171(1)	VWJ0636	CAPSTAN FPC	1	
173(1)	VEK6098	PHOTO TR (R) U.	1	
174(1)	VEK6035	PHOTO TR (L) U.	1	
175(1)	VEP03A93A	RT-FPC	1	
176(1)	VXP1539	IMPEDANCE ROLLER	1	
177(1)	VXL2446	IMPEDANCE ARM	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
200(2)	VHD0282	P2 ADJUST PLATE SCREW	1	
201(2)	VMA6542	P2 ADJUST PLATE	1	
202(2)	VMD0701	SUPPLY POST STOPPER	1	
203(2)	VMD1166	V STOPPER BASE	1	
204(2)	VXP0841	SUPPLY ROLLER POST UNIT	1	
205(2)	VGQ0842	P2 CAP	1	
206(2)	VMD0769	TAPE PROTECTOR	1	
207(2)	VXA2221	SUPPLY SHAFT HOLDER(1)UNIT	1	
208(2)	VXA2256	SUPPLY SHAFT HOLDER ANGLE	1	
		UNIT		
209(2)	VMM0144	CONNECTION ROD	1	
210(2)	VMX1282	RING GUIDE SLEEVE UNIT	3	
211(2)	VXA2231	CONNECTION TIE UNIT	1	
212(2)	VMB1319	LOADING SPRING	1	
213(2)	VXA2253	LOADING RING (S) (1) UNIT	1	
214(2)	VDP1160	RING GUIDE ROLLER	3	
215(2)	VMB1319	LOADING SPRING	1	
216(2)	VXA3576	LOADING RING (T) (1) UNIT	1	
217(2)	VMC0250	PRESSER SPRING	1	
218(2)	VMX1279	RING GUIDE SLEEVE	3	
219(2)	VMD1155	LOADING GUIDE (S) (1)	1	
220(2)	VMD1128	LOADING GUIDE (S) (2)	1	
221(2)	VMX1088	SUPPLY UPPER LIMITER	1	
222(2)	VMS2888	P1POST SLEEVE (B)	1	
223(2)	VMX1581	P1 COLLAR	1	
224(2)	VDP1265	P1 ROLLER	1	
225(2)	VMA6547	P1 LIMITER PLATE	1	
227(2)	VXA3112	P1 BASE (1) UNIT	1	
228(2)	VXD0098	THRUST SPACER	1	
229(2)	VHD0204	THRUST SCREW NUT	1	
230(2)	VHD0368	ROLLER POST SCREW	2	
231(2)	VMX0775	DUST SEAL	2	
232(2)	VXD0108	CAPSTAN HOUSING UNIT	1	
233(2)	VXP0927	TAKE-UP ROLLER POST UNIT	1	
234(2)	VMA6546	TAKE-UP SHAFT HOLDER ANGLE	1	
235(2)	VXA3116	TAKE-UP SHAFT HOLDER (A)	1	
		UNIT		
236(2)	VMD1165	TAKE-UP LOADING BASE	1	
237(2)	VMC0352	SHAFT HOLDER PRESSURE	1	
		SPRING		
238(2)	VMA7226	SHAFT HOLDER PLATE ANGLE	1	
239(2)	LN59NV	LED	1	
240(2)	VHD0367	TAKE-UP SHAFT ADJ. SCREW	1	
242(2)	VEM0431	LOADING MOTOR UNIT	1	<!>
245(2)	VMB1747	TENSION SPRING	1	
246(2)	VXL1262	TENSION ARM UNIT	1	
247(2)	VXZ0245	TENSION BAND UNIT	1	
248(2)	VML2065B	BAND RELEASE ARM	1	
249(2)	VXA4828	TENSION KICK LEVER	1	
250(2)	VML2064B	EJECT LEVER (A)	1	
251(2)	VXA3020	SUPPORTER UNIT	1	
252(2)	VMB1405	BRAKE SPRING	1	
253(2)	VXZ0207B	BRAKE (R) UNIT	1	
254(2)	VXZ0206B	BRAKE (L) UNIT	1	
255(2)	VXA4263	BRAKE PLATE (1) UNIT	1	
256(2)	VML2073	EJECT LEVER (B)	1	
257(2)	VED0183	A/C HEAD UNIT	1	
258(2)	VHD0275	A/C HEAD ADJUST SCREW	1	
259(2)	VMB1321	A/C HEAD ADJUST SPRING	1	
260(2)	VHD0381	A/C HEAD TILT ADJUST SCREW	1	
261(2)	VXL2256	A/C HEAD ARM UNIT	1	
262(2)	VWJ0608	A/C HEAD FPC	1	
263(2)	VHN0077	A/C HEAD ARM NUT	1	
264(2)	VMB1320	A/C HEAD SPRING	1	
265(2)	VDG0208	LOADING GEAR (A)	1	
266(2)	VDG0461	LOADING GEAR (B)	1	
267(2)	VHN0072	ADJUST NUT	1	
268(2)	VHN0047	M2 NYLON NUT	2	
269(2)	VMS2693	P4 POST SLEEVE	1	
270(2)	VXJ0057	P5 POST SLEEVE	1	
271(2)	VMB1322	P4,P5 SPRING	2	
272(2)	VML2067B	PINCH LEVER	1	
273(2)	VMB2071	PINCH LEVER SPRING	1	
274(2)	VXL1652	PINCH ROLLER ARM (1) UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
275(2)	VXL1650	PINCH ARM UNIT	1	
276(2)	VMB1326	PINCH ARM SPRING	1	
277(2)	VXL1264B	SOFT BRAKE LEVER (S) UNIT	1	
278(2)	VMB1314	SOFT BRAKE SPRING (S)	1	
279(2)	VMB1771	REW ARM SPRING	1	
280(2)	VXL1649B	FF/REW ARM UNIT	1	
282(2)	VBS0021	FE HEAD	1	
283(2)	VMD1129	FE HEAD BASE	1	
284(2)	VMB1447	SUPPORTER SPRING	1	
285(2)	VXA3579	SLIDE BASE (O) UNIT	1	
286(2)	VMB1965	SLIDE SPRING	1	
287(2)	VML2285	IMPEDANCE LEVER	1	
288(2)	VHN0109	PUSH NUT	1	
289(2)	VMB1964	IMPEDANCE DRIVE SPRING	1	
290(2)	VXL1879	IMPEDANCE ARM (1) UNIT	1	
291(2)	VDP1285	IMPEDANCE ROLLER	1	
292(2)	VMX1088	SUPPLY UPPER LIMITER	1	
294(2)	VXA2220	SUPPLY SHAFT HOLDER UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
401(4)	VMD2007	TRIPOD FRAME	1	
402(4)	VSC3732	TRIPOD SHIELD PLATE	1	
403(4)	VYP6171	CASSETTE COVER U.	1	
404(4)	VYK6921	SIDE CASE (L)(1) U.	1	
405(4)	VYK4795	GRIP CASE (1) U.	1	
408(4)	VXU1138	ZOOM BUTTON (1) U.	1	
409(4)	VYF1893	HOOD CAP U.	1	
410(4)	VYC0770	GRIP BELT U.	1	
411(4)	VKM4075	FRONT CASE	1	
412(4)	VHD0386	GRIP BELT SCREW	1	
413(4)	VMP3822	SHOLDER ANGLE (F)	1	
415(4)	VKM4352	LENS COVER	1	
416(4)	VHD0371	SCREW	2	
418(4)	VEK5863	MIC U.	1	
419(4)	VDW0191	LENS HOOD	1	
420(4)	VWJ0789	CYLINDER FLEX. CABLE	1	
421(4)	VWJ0636	CAPSTAN FLEX. CABLE	1	
423(4)	VHD0771	SCREW	2	
424(4)	VMP3688	FRAME SET. ANGLE	1	
426(4)	VEE7782	ZOOM FLEX	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
301(3)	VXW0189	LENS U.	1	
302(3)	VXQ0402	MAIN LENS U.	1	
303(3)	VXP1507	MASTER LENS U.	1	
305(3)	VEK7256	FOCUS ENCODER U.	1	
306(3)	VXL2305	IRIS U.	1	
307(3)	VWJ0696	LENS FLEXIBLE CABLE	1	
308(3)	VHD0779	SCREW	5	
309(3)	EVAJHDBUA3B14	ZOOM ENCODER U.	1	
310(3)	VEM0602	ZOOM MOTOR U.	1	
311(3)	VEM0466	FOCUS MOTOR U.	1	
312(3)	VHD0853	SCREW	2	
313(3)	VHD0781	SCREW	2	
314(3)	VMX2231	WASHER	2	
315(3)	VDL0322	CRYSTAL FILTER	1	
316(3)	VMX2195	CCD CUSHION	1	
317(3)	VEK6143	CCD U.	1	
318(3)	VSC3764	CCD SHIELD CASE	1	
319(3)	VMD2023	CAM P.C.BOARD FRAME	1	
320(3)	VMP3695	CAMERA FRAME	1	
321(3)	VMX2232	WASHER	2	
322(3)	VSC3818	SHIELD PLATE	1	
330(3)	VGQ1986	CHARA. GENE. JACK PIECE	1	
331(3)	VMP4586	LENS FRAME	1	
332(3)	VXP1531	MANUAL FOCUS U.	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
501(5)	VGQ1129	BATTERY CATCHER	1	
502(5)	VMC0876	BATTERY LOCK ANGLE	1	
503(5)	VGQ2849	BATTERY LOCK	1	
504(5)	VGQ2850	INTERMEDIATE LEVER	1	
505(5)	VMP3689	SHOLDER ANGLE	1	
506(5)	VMP3692	BATTERY CASE FIX. ANGLE	1	
507(5)	VMB2524	BATTERY PUSHING SPRING	1	
508(5)	VKM3072	BATTERY CASE U.	1	
509(5)	VKF1876	BATTERY DOOR	1	
510(5)	VMC0237	DOOR SPRING	1	
511(5)	VXU1430	TOP OPERATION PANEL (1) U.	1	
512(5)	VKF1935	CURSOR	1	
513(5)	VKF1878	RESET MEMORY DOOR	1	
514(5)	VMD2006	TOP FRAME	1	
516(5)	VKM3071	HANDLE UPPER CASE	1	
517(5)	VMC0726	SHOE SPRING	1	
518(5)	VMP2407	SHOE	1	
519(5)	VGU5898	SLIDE KNOB (A)	1	
520(5)	VGU5908	SLIDE KNOB (B)	1	
522(5)	VGP3162	CAMERA OPERATION PANEL	1	
523(5)	VYK6888	SIDE CASE (R) U.	1	
524(5)	VMT0452	SHOLDER PAD	1	
525(5)	VWJ0609	AV JACK-MAIN CABLE	1	
526(5)	VYK6882	BATTERY CASE U.	1	
527(5)	VMZ2063	JACK BARRIER	1	
528(5)	VWJ0638	CAMERA OPE.-PROCESS FLEX.	1	
529(5)	VWJ0610	VTR OPE.-BIN FLEX.	1	
530(5)	VEK6102	EAR SPEAKER U.	1	
531(5)	VMZ2090	BATT. BARRIER	1	

SERVICING FIXTURE & TOOLS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
601(6)	ELY07V570F	DEFLECTION YOKE	1	
602(6)	VEK6002	CRT U.	1	
603(6)	VYK4496	FINDER CASE (UPPER)	1	
604(6)	VMC0316	EYE CAP HOLDER SPRING	1	
605(6)	VDL0140	LENS (2)	1	
606(6)	VKF1996	EYE CAP HOLDER	1	
607(6)	VMG0716	EYE CAP	1	
608(6)	VGU3895	EYESIGHT ADJ. LEVER	1	
609(6)	VKF1278	LENS HOLDER GUIDE	1	
610(6)	VKM3077	FINDER CASE (LOWER)	1	
611(6)	VKM4334	EVF MAIN CASE LOWER U.	1	
612(6)	VYK6877	EVF MAIN CASE UPPER U.	1	
613(6)	VMP1358	EVF BARING	1	
614(6)	VMC0902	EVF LOCK SPRING	1	
615(6)	VMP3823	EVF ROTARY PLATE	1	
616(6)	VMP3690	EVF MOUNT ANGLE	1	
617(6)	VMX2172	WAVING WASHER	1	
618(6)	VGQ2914	EVF ROTATION BASE	1	
619(6)	VGQ2967	ROTARY BASE COVER	1	
620(6)	VMC0914	ROTARY BASE SPRING	1	
621(6)	VDL0349	MIRROR	1	
622(6)	VYQ0082	LENS HOLDER U.	1	
623(6)	VMC0890	SPRING PALTE	1	
624(6)	VGQ2846	WIRE COVER	1	
625(6)	VGQ3069	EVF SLIDER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
801(7)	VFC1309	SHOLDER STRAP	1	
802(7)	VJA0180	BATTERY CATCHER	1	
803(7)	VJA0573	3PIN DC INPUT CABLE	1	
805(7)	VQT6476	OPERATING INSTRUCTIONS	1	AG-DP200E
805(7)	VQT6477	OPERATING INSTRUCTIONS	1	AG-DP200B
806(7)	VPK1868	ACCESSORY CASE	1	
807(7)	VPN2612	CUSHION	2	
808(7)	VPG8436	PACKING CASE	1	AG-DP200E
808(7)	VPG8437	PACKING CASE	1	AG-DP200B
810(7)	VJA0816	4PIN S-VHS CABLE	1	
811(7)	VFA0151	21PIN ADAPTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VFK0326	HEX. WRENCH SET	1	
	VFM8180HADH	VHS ALIGNMENT TAPE	1	
	VFK0335	RETAINING RING REMOVER	1	
	VFK0191	POST ADJUSTMENT PLATE	1	
	VFK0190	REEL TABLE HEIGHT FIXTURE	1	
	VFK0328	H-POSITION ADJ. SCREWDRIVER	1	
	VFK0329	POST ADJ. SCREWDRIVER	1	
	VFK0157	FINE ADJ. SCREWDRIVER	1	
	VFK0133	DIAL TORQUE GAUGE	1	
	VFK0134	ADAPTOR FOR VFK0133	1	
	VFK0180	PLASTIC CLAMPER ONLY	1	
	VFK0948	CHECK LIGHT	1	
	VFK0132	BACK TENSION METER	1	
	VFK27	HEAD CLEANING STICK	1	
	MOR265	MORLYTONE GREASE	1	
	VFK0644	EVR FIXTURE	1	
	VFK0701ROM32	ROM IC	1	
	VFK0667	30P EXTENSION CABLE	1	
	VFK0724	32P EXTENSION CABLE	1	
	VFK0783	12P EXTENSION CABLE	1	
	VFK0802	24P FLAT CABLE	1	
	VFK0823	6P FLAT CABLE	1	

4-3. ELECTRICAL REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP26181A	P.C.BOARD W/COMPONENT	1	
		TALLY		
	VEP28068A	P.C.BOARD W/COMPONENT	1	
		EVF		
	VXU1138	P.C.BOARD W/COMPONENT	1	
		ZOOM		
	VEK5869	P.C.BOARD W/COMPONENT	1	
		S/S		
	VEK5870	P.C.BOARD W/COMPONENT	1	
		SUB S/S		
	VEP03D30A	P.C.BOARD W/COMPONENT	1	
		MAIN		
	VEP00V72A	P.C.BOARD W/COMPONENT	1	
		VITC RESET		
	VEP22117A	P.C.BOARD W/COMPONENT	1	
		CCD DRIVE		
	VEP23404A	P.C.BOARD W/COMPONENT	1	
		PROCESS		
	VEK5865	P.C.BOARD W/COMPONENT	1	
		CHARA/GENE		
	VEP20437C	P.C.BOARD W/COMPONENT	1	
		CAMERA OPERATION (A)		
	VEP20438B	P.C.BOARD W/COMPONENT	1	
		CAMERA OPERATION (B)		
	VEP06817A	P.C.BOARD W/COMPONENT	1	
		VTR OPERATION (A)		
	VEP06847B	P.C.BOARD W/COMPONENT	1	
		VTR OPERATION (B)		
	VEP22118A	P.C.BOARD W/COMPONENT	1	
		CCD		
	VEP03D37A	P.C.BOARD W/COMPONENT	1	
		AV JACK (A)		
	VEP03957C	P.C.BOARD W/COMPONENT	1	
		AV JACK (B)		
	VEK7280	P.C.BOARD W/COMPONENT	1	
		RT-FPC U		
	VES0689	P.C.BOARD W/COMPONENT	1	
		MECHA CONNECTION		
	VEK6035	P.C.BOARD W/COMPONENT	1	
		PHOTO HOLDER (L)		
	VEK6098	P.C.BOARD W/COMPONENT	1	
		PHOTO HOLDER (R)		
	VEK5868	P.C.BOARD W/COMPONENT	1	
		FE HEAD		
	VEP03D31A	P.C.BOARD W/COMPONENT	1	
		TBC		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP26181A	P.C.BOARD W/COMPONENT		
		TALLY		
C1881	ECEV0JA101	E.CAPACITOR 6.3V 100U	1	
C1882	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C1885	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C1886	ECST0JY475Z	T.CAPACITOR CH6.3V 4.7U	1	
D1881	BR3338S	DIODE	1	<R>
D1882	MI310	DIODE	1	<R>
IC1882	M52944FP	IC	1	
IC1883	TA75W393FU	IC	1	
L1881	ELJPC6R8KB	COIL	1	<R>
P1881	VJP3125D004	CONNECTOR (MALE) 4P	1	
P1882	VJP3172B004	CONNECTOR (MALE) 4P	1	
Q1881	2SD1030-S	TRANSISTOR	1	
R1881	ERJ3GEYJ125	M.RESISTOR CH1/16W 12M	1	
R1882	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R1883	ERJ8GEYJ181	M.RESISTOR CH 1/8W 180	1	
R1884	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R1885	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R1886	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R1890	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
VR1881	EVM7JSX30B14	V.RESISTOR	1	
		MISCELLANEOUS		
	VGQ3310	IR PLATE HOLDER R	1	
	VGQ3306	IR PLATE SPACER R	1	
	VDL0397	IR CUT FILTER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP28068A	P.C.BOARD W/COMPONENT		
		EVF		
C801	ECHU1C104J	P.CAPACITOR CH 16V 0.1U	1	
C802	ECEA1CKE101	E.CAPACITOR 16V 100U	1	
C804	ECUM1C155ZFN	C.CAPACITOR CH 16V 1.5U	1	
C805	ECEA0JKE221	E.CAPACITOR 6.3V 220U	1	
C806	ECUM1E123KBN	C.CAPACITOR CH 25V 0.012U	1	
C807	ECEA1HKS010	E.CAPACITOR 50V 1U	1	
C808	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C809	ECA1EKF100	E.CAPACITOR 25V 10U	1	
C810	ECUM2A472JUM	C.CAPACITOR CH100V 4700P	1	
C811	ECEA1CKE101	E.CAPACITOR 16V 100U	1	
C812	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C813	VCK0088K151	S.CAPACITOR 1KV 150P	1	
C814	ECEA1HKS010	E.CAPACITOR 50V 1U	1	
C815	ECUM2H331KBM	C.CAPACITOR CH500V 330P	1	
C816	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C820	ECUM2A102JUN	C.CAPACITOR CH100V 1000P	1	
C831	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
D801	MA141K	DIODE	1	<R>
D802	SFPL-52	DIODE	1	<R>
IC801	AN2515NS	IC	1	<R>
L801	ELJPA390KB	COIL 39UH	1	
L802	ELH5L218D	COIL	1	
P801	VJP1598T	CONNECTOR (MALE) 5P	1	
P802	VJP3007E004	CONNECTOR (MALE) 4P	1	
P803	VJP1229T	CONNECTOR (MALE) 2P	1	
P804	VJP3007E003	CONNECTOR	1	
Q802	2SD968A	TRANSISTOR	1	<R>
Q803	2SA1532	TRANSISTOR	1	<R>
R801	ERJ6ENF4422	M.RESISTOR CH1/10W 2.2K	1	
R802	ERJ6GEYJ3R9	M.RESISTOR CH1/10W 3.9	1	
R805	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R807	ERJ3GEYJ4R7	M.RESISTOR CH1/16W 4.7	1	
R808	ERJ3GEYJ242	M.RESISTOR CH1/16W 2.4K	1	
R809	ERJ3GEYJ564	M.RESISTOR CH1/16W 560K	1	
R810	ERJ6GMYF104	M.RESISTOR CH1/10W 100K	1	
R814	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R815	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R816	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R817	ERJ3GEYJ242	M.RESISTOR CH1/16W 2.4K	1	
R818	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	1	
R819,20	ERJ6GEYJ335	M.RESISTOR CH1/10W 3.3M	2	
R821	ERJ6GMYJ105	M.RESISTOR CH1/10W 1M	1	
R823	ERJ3GEYJ120	M.RESISTOR CH1/16W 12	1	
R825	VSF0015A025	IC PROTECTOR	1	<!>
R830	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R832	ERJ6ENF4222	M.RESISTOR CH1/10W 2.2K	1	
T801	ETF08L16B	TRANSFORMER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
VR801	EVM7JGA00BE2	V.RESISTOR	1	
VR803	EVMLPNA00BV6	V.RESISTOR	1	
VR804	EVMLPNA00BE6	V.RESISTOR	1	
	VXU1138	P.C.BOARD W/COMPONENT		
		ZOOM		
	VEK5869	P.C.BOARD W/COMPONENT		
		S/S		
	VEK5870	P.C.BOARD W/COMPONENT		
		SUB S/S		
P305	VJS3172B005	CONNECTOR (FEMALE) 5P	1	
SW1890,1	EVQQSU04W	SWITCH	2	<R>
		MISCELLANEOUS		
	VXU1120	ZOOM BUTTON	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP03D30A	P.C.BOARD W/COMPONENT		
		MAIN		
	VEP00V72A	P.C.BOARD W/COMPONENT		
		VITC RESET		
C01	ECST0JY106Z	C.CAPACITOR CH6.3V 10U	1	
C01	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C02	ECST0JY106Z	C.CAPACITOR CH6.3V 10U	1	
C02	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C02	ECUX1E222KBQ	C.CAPACITOR 25V 2200P	1	
C03	ECST0JY106Z	C.CAPACITOR CH6.3V 10U	1	
C03	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C04	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C04	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C04	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C05	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C05,06	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	2	
C06	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C06	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C07	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C07	ECUX1E472ZFQ	C.CAPACITOR 25V 4700P	1	
C07	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C08	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C08	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C08	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C09	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C09	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C09,10	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	2	
C10	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C10	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C11	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C11	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C11	ECUX1E223KBV	C.CAPACITOR CH 25V 0.023U	1	
C12	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C12	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C12	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C13	ECUX1E472ZFQ	C.CAPACITOR 25V 4700P	1	
C13	ECUX1H681JCV	C.CAPACITOR CH 50V 680P	1	
C14	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C14	ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	
C14	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C15	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C15	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C16	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C16	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C16,17	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	2	
C17	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C18	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C18	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C18	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C19	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C19	ECUX1E222KBQ	C.CAPACITOR 25V 2200P	1	
C20	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C20	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C20	ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	
C21	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C28	ECUX1H152KBV	C.CAPACITOR CH 50V 1500P	1	
C28	ECUX1H561JCV	C.CAPACITOR CH 50V 560P	1	
C29	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C29	ECST1CY105Z	T.CAPACITOR CH 16V 1U	1	
C29	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C30	ECUM1C334KBM	C.CAPACITOR CH 16V 0.33U	1	
C30	ECUX1H223ZFV	C.CAPACITOR CH 50V 0.022U	1	
C30	ECUX1H271JCV	C.CAPACITOR CH 50V 270P	1	
C31	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C31	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C31	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C32	ECST1CY105Z	T.CAPACITOR CH 16V 1U	1	
C32	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C32	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C33	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C33	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C33	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C34	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C34	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C34	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C35	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C35	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C36	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C36	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C36	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C37	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C37	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C37	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C38	ECST1AY225Z	T.CAPACITOR CH 10V 22U	1	
C39	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C41	ECST1AY225Z	T.CAPACITOR CH 10V 22U	1	
C42	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C43	ECUX1H121JCQ	C.CAPACITOR 50V 120P	1	
C1001	ECUM1C225ZFM	C.CAPACITOR CH 16V 2.2U	1	
C1002	ECEV1EA680	E.CAPACITOR CH 25V 68U	1	
C1003	ECGC0KB8R2	E.CAPACITOR 8V 8.2U	1	
C1004	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1005	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C1006	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C1007	ECEV0JA220	E.CAPACITOR CH6.3V 22U	1	
C1008	ECGC0KB8R2	E.CAPACITOR 8V 8.2U	1	
C1009	ECUX1H681JCV	C.CAPACITOR CH 50V 680P	1	
C1010	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C1011	ECUM1C225ZFM	C.CAPACITOR CH 16V 2.2U	1	
C1012	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C1013	ECGC1BB4R7	C.CAPACITOR 12V 4.7P	1	
C1014	ECUX1H561JCV	C.CAPACITOR CH 50V 560P	1	
C1016	ECUM1C335ZFM	C.CAPACITOR CH 16V 3.3U	1	
C1017	ECUM1E105ZFM	C.CAPACITOR CH 25V 1U	1	
C1019	ECUM1E474ZFM	C.CAPACITOR CH 25V 0.47U	1	
C21	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C21	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C22	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C22	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C22,23	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	2	
C23	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C23	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C24	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C24	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C24	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C25	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C25	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C25	ECUX1H223ZFV	C.CAPACITOR CH 50V 0.022U	1	
C26	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C26	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C26	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C27	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C27	ECUX1H220JCQ	C.CAPACITOR 50V 22P	1	
C27	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C28	ECUX1E103ZFQ	C.CAPACITOR CH 25V 0.01U	1	
C1020	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C1022	ECUM1H104ZFM	C.CAPACITOR CH 50V 0.1U	1	
C1024	ECUM1C474ZFM	C.CAPACITOR CH 16V 0.47U	1	
C1025	ECUM1C104KBN	C.CAPACITOR CH 16V 0.1U	1	
C1026	ECEV1HA010	E.CAPACITOR CH 50V 1U	1	
C1027	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C1028	ECUM1C474KBM	C.CAPACITOR CH 16V 0.47U	1	
C1029	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1030	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1031	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1032	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1033,34	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C1035	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C1036	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C1037	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1061	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C1062	ECEV1EA470	E.CAPACITOR CH 25V 47U	1	
C1063	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C1064	ECEV1EA470	E.CAPACITOR CH 25V 47U	1	
C1065,66	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C1068	ECEV1CA101	E.CAPACITOR CH 16V 100U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C1069,70	ECUM1C475ZFM	C.CAPACITOR CH 16V 4.7U	2	
C1071	ECUM1E225ZFM	C.CAPACITOR CH 25V 22U	1	
C1072	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C1073	ECUM1E105ZFM	C.CAPACITOR CH 25V 1U	1	
C1074	ECUM1C475ZFM	C.CAPACITOR CH 16V 4.7U	1	
C1106	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C1107	ECEV0JA220	E.CAPACITOR CH6.3V 22U	1	
C1108	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C1109	ECEV0JA220	E.CAPACITOR CH6.3V 22U	1	
C1110	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C1111	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C2101	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C2102	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C2103	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C2104	ECUM1F473KBN	C.CAPACITOR CH 25V 0.047U	1	
C2105,06	ECUX1H561KBV	C.CAPACITOR CH 50V 560P	2	
C2107	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C2108	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C2109	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C2110	ECUX1E223KBV	C.CAPACITOR CH 25V 0.023U	1	
C2111	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C2112	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C2113	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C2115	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C2116	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C2117,18	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C2119-21	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C2122	ECUX1H333ZFV	C.CAPACITOR CH 50V 0.033U	1	
C2123-25	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C2126	ECEV1HAR47	E.CAPACITOR CH 50V 0.47U	1	
C2127	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C2128	ECUX1H333ZFV	C.CAPACITOR CH 50V 0.033U	1	
C2129	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2130	ECEV0SA470	E.CAPACITOR CH 4V 47U	1	
C2131	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C2132	ECUM1H102JCN	C.CAPACITOR CH 50V 1000P	1	
C2133	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2134	ECEV1AA330	E.CAPACITOR CH 10V 330U	1	
C2135	ECEV0GA101	E.CAPACITOR CH 4V 100U	1	
C2136	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C2141	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C2142	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C2143	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C2144-46	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	3	
C2147,48	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	2	
C2149	ECUM1C185ZFN	C.CAPACITOR CH 16V 1.8U	1	
C2150	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C2151	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C3002	ECEV0GA470	E.CAPACITOR CH 4V 47U	1	
C3003,04	ECEV0GA471	E.CAPACITOR CH 4V 470U	2	
C3005	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C3006	ECUX1H271JCV	C.CAPACITOR CH 50V 270P	1	
C3007	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3008	ECUX1H271JCV	C.CAPACITOR CH 50V 270P	1	
C3009	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3010	ECUX1H271JCV	C.CAPACITOR CH 50V 270P	1	
C3011,12	ECST0JY475Z	T.CAPACITOR CH6.3V 4.7U	2	
C3013	ECST0JY106Z	T.CAPACITOR CH6.3V 100U	1	
C3014	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3015	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3016	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C3017	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C3018	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C3019	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C3021,22	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	2	
C3023	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3024	ECST0JY106Z	T.CAPACITOR CH6.3V 100U	1	
C3025,26	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C3027	ECST0JY106Z	T.CAPACITOR CH6.3V 100U	1	
C3028	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3029	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3030	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3031	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3033,34	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C3036	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3037	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3042	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C3043	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C3045	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C3047	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3055	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3059	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C3060	ECEV1CAN4R7	E.CAPACITOR CH 16V 4.7U	1	
C3061	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C3062	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C3065	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3067	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C3069	ECEV0JA220	E.CAPACITOR CH6.3V 22U	1	
C3071	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3072	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3075	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3080	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3081	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C3087	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3091	ECST1AD336Z	T.CAPACITOR CH 10V 33U	1	
C3092	ECST1CD226Z	T.CAPACITOR CH 16V 22U	1	
C3093	ECST0JC336Z	T.CAPACITOR CH6.3V 33U	1	
C3094	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3095	ECUX1E123KBV	C.CAPACITOR CH 25V 0.012U	1	
C3098	ECST0JC336Z	T.CAPACITOR CH6.3V 33U	1	
C3201	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C3203	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C3208	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3212	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C3501	ECST0JX226Z	T.CAPACITOR CH6.3V 22U	1	
C3502,03	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C3504	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C3505	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3506	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3507	ECUM1H103KBM	C.CAPACITOR CH 50V 0.01U	1	
C3508	ECUX1C223KBV	C.CAPACITOR CH 16V 0.022U	1	
C3509	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C3510	ECUM1C224KBN	C.CAPACITOR CH 16V 0.22U	1	
C3511	ECST0JC476Z	E.CAPACITOR CH6.3V 470M	1	
C3512	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3513	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C3514	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C3515	ECUM1H103JCM	C.CAPACITOR CH 50V 0.01U	1	
C3516	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3517	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3518	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C3519	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3520	ECUX1C153KBV	C.CAPACITOR CH 16V 0.015U	1	
C3521	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C3522	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3523	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3524,25	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	2	
C3526	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C3527	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C3528	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3529	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C3530-33	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	4	
C3534	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C3535	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3536,37	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	2	
C3538	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3539	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3540	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3541	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3542	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3543	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3544	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3545	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3546	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3547	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3548	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C3549	ECUM1C224KBN	C.CAPACITOR CH 16V 0.22U	1	
C3550	ECST0JC476Z	E.CAPACITOR CH6.3V 47U	1	
C3551	ECST1DX475Z	T.CAPACITOR CH 20V 4.7U	1	
C3552	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3553	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C3554	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3556	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3561	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C3562	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3563	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3580	ECUX1C683KBV	C.CAPACITOR CH 16V 0.068U	1	
C3801	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3802	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3803	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3804	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C3805	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3806,07	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	2	
C3808,09	ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C3810	ECST0JC336Z	T.CAPACITOR CH6.3V 33U	1	
C3811-13	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C3814	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3815	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3816	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3817	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C3818	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C4001	ECEV1HA2R2	E.CAPACITOR CH 50V 2.2U	1	
C4002	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C4003	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C4004	ECUX1H122KBV	C.CAPACITOR CH 50V 1200P	1	
C4005	ECUX1C153KBV	C.CAPACITOR CH 16V 0.015U	1	
C4006	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C4007	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C4008	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C4009	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C4010	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C4011	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C4012	ECEV1HA2R2	E.CAPACITOR CH 50V 2.2U	1	
C4013	ECEV0JA220	E.CAPACITOR CH6.3V 22U	1	
C4014	ECEV0JAN220	E.CAPACITOR CH6.3V 22U	1	
C4015	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C4016	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C4017	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C4018	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C4019	ECUM2A682JCM	C.CAPACITOR CH100V 6800P	1	
C4020	ECUX1H123KBV	C.CAPACITOR CH 50V 0.012U	1	
C4021	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	1	
C4022	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
C4023	ECEV0GA101	E.CAPACITOR CH 4V 100U	1	
C4024	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C4029,30	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C4031	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C4032	ECUX1H562KBV	C.CAPACITOR CH 50V 5600P	1	
C4034	ECEV0GA101	E.CAPACITOR CH 4V 100U	1	
C4035,36	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C4039,40	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	2	
C4047,48	ECST0JX226Z	T.CAPACITOR CH6.3V 22U	2	
C4049,50	ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C4051,52	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	2	
C4053	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
C4054	ECST0JX156Z	T.CAPACITOR CH6.3V 15U	1	
C4055	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C4056	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C4057	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
C4059,60	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	2	
C4501,02	ECEV0GAN470	E.CAPACITOR CH 4V 47U	2	
C4503,04	ECEV1AAN100	E.CAPACITOR CH 10V 10U	2	
C4505,06	ECEV0JA220	E.CAPACITOR CH6.3V 22U	2	
C4507	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C4508	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C4509	ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
C4510	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
C4511,12	ECEV05A470	E.CAPACITOR CH 4V 47U	2	
C4513	ECST1AD476Z	T.CAPACITOR CH 10V 47U	1	
C4514	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C4515,16	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	2	
C4517	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
C4518	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C4519	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C4520	ECUX1H391JCV	C.CAPACITOR CH 50V 390P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C4521	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C4522	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C4523	ECUX1H181JCV	C.CAPACITOR CH 50V 180P	1	
C4524	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C4525	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C4526	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C4528	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C4529	ECST1AD476Z	T.CAPACITOR CH 10V 47U	1	
C4530	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C4532,33	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	2	
C5001	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5002,03	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C5004-07	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C5008-11	ECUX1C103KBV	C.CAPACITOR CH 16V 0.01U	4	
C5012-15	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	4	
C5016-23	ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	8	
C5024	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5025-27	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C5028	ECUM1E273KBN	C.CAPACITOR CH 25V 0.027U	1	
C5029	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C5030,31	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	2	
C5032	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5033	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5034	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5035	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5036-39	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	4	
C5040-43	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	4	
C5044-47	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C5048-51	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	4	
C5052	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	1	
C5053	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C5054	ECUX1H390JCV	C.CAPACITOR CH 50V 39P	1	
C5055,56	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C5058	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5059	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5062-65	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C5066	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5067	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5072	ECUX1E123KBV	C.CAPACITOR CH 25V 0.012U	1	
C5073	ECUM1E683KBN	C.CAPACITOR CH 25V 0.068U	1	
C5080	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5081	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5501	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C5502	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5503	ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C5504	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5505	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5506	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5507	ECUX1H060CCV	C.CAPACITOR CH 50V 6P	1	
C5508	ECUX1H271JCV	C.CAPACITOR CH 50V 270P	1	
C5515	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5516	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C5517	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C5540	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C5548	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C5549	ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
C5562,63	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	2	
C5565	ECUX1C473KBV	C.CAPACITOR CH 16V 0.047U	1	
C5566	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C5571	ECUX1H182KBV	C.CAPACITOR CH 50V 1800P	1	
C5572	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5574	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C5576	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C5581	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C5601	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C5602	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C5603	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C5605	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C5607	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C6001	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C6003-05	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	3	
C6006-08	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C6009	ECEV1VA220	E.CAPACITOR CH 35V 22U	1	
C6010,11	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C6012	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C6013	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C6014	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C6015	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C6016	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C6018	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C6019	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C6020,21	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C6022,23	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	2	
C6024	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6025	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C6026	ECEV05A330	E.CAPACITOR CH 4V 33U	1	
C6027	ECEV1VA220	E.CAPACITOR CH 35V 22U	1	
C6028	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6029,30	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	2	
C6031	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C6032	ECEV05A470	E.CAPACITOR CH 4V 47U	1	
C6033	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C6034	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C6035	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6036,37	ECEV05A470	E.CAPACITOR CH 4V 47U	2	
C6038	ECST1EC475Z	T.CAPACITOR CH 25V 4.7U	1	
C6040	ECEA0JKS220	E.CAPACITOR 6.3V 22U	1	
C6041	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
C6042,43	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C6201	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C6202	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C6203	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C6204	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C6206	ECEV0JA220	E.CAPACITOR CH6.3V 22U	1	
C6207	ECEV1HA3R3	E.CAPACITOR CH 50V 3.3U	1	
C6208,09	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	2	
C6210	ECUX1H561JCV	C.CAPACITOR CH 50V 560P	1	
C6211	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C6212	ECEV1EA4R7	E.CAPACITOR CH 25V 4.7U	1	
C6213	ECUX1H223ZFV	C.CAPACITOR CH 50V 0.022U	1	
C6214	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C6215	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	1	
C6217	ECEV1CA100	E.CAPACITOR CH 16V 10U	1	
C6218	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C6219	ECUM1H273KBM	C.CAPACITOR CH 50V 0.027U	1	
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D1010,11	MA3200M	DIODE	2	<R>
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D1061,62	SB05-05CP	DIODE	2	<R>
D1063,64	MA728	DIODE	2	<R>
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D3502	1SS355	DIODE	1	<R>
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D3901,02	MA745	DIODE	2	<R>
D4001	MA142K	DIODE	1	<R>
D4004	MA142WK	DIODE	1	<R>
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D4006-08	MA157	DIODE	3	<R>
D4501	MA142WK	DIODE	1	<R>
D4502	MA143	DIODE	1	<R>

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
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D5002	MA132WA	DIODE	1	<R>
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D5004	MA132WA	DIODE	1	<R>
D5005	MA133	DIODE	1	<R>
D5006-09	MA728	DIODE	4	<R>
D5501	MA132WK	DIODE	1	<R>
D6001	MA143	DIODE	1	<R>
D6002	MA132WK	DIODE	1	<R>
D6004-07	MA141WA	DIODE	4	<R>
D6008	MA121	DIODE	1	<R>
D6009,10	MA745	DIODE	2	<R>
D6012	MA132WK	DIODE	1	<R>
D6013	MA132WA	DIODE	1	<R>
D6014,15	MA141WA	DIODE	2	<R>
D6016,17	MA141K	DIODE	2	<R>
D6018	MA3062	DIODE	1	<R>
D6019	MA3220	DIODE	1	<R>
D6020	MA141K	DIODE	1	<R>
D6022,23	MA141K	DIODE	2	<R>
D6024	BR1102W	DIODE	1	<R>
D6025,26	MA745	DIODE	2	<R>
D6201	MA141K	DIODE	1	<R>
FL01	VLF0974	FILTER	1	
FL01	VLF0986	FILTER	1	
FL03	VLF0973	FILTER	1	
FL3501	VLF1030	FILTER	1	
FL4501	VLF0934	FILTER	1	
FL4502	VLF0935	FILTER	1	
FP2101	VJS2958B010	CONNECTOR (FEMALE) 10P	1	
FP2102	VJS2848B014	CONNECTOR (FEMALE) 14P	1	
FP3001	VJS3406D016	CONNECTOR	1	
FP4001	VJS2959B007	CONNECTOR (FEMALE) 7P	1	
FP5001	VJS2958B023	CONNECTOR (FEMALE) 23P	1	
FP6001	VJS2960A012	CONNECTOR (FEMALE) 12P	1	
IC01	AN2263FHP	IC	1	<R>
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IC1001	BA9703K	IC	1	<R>
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IC2102	UN224	TRANSISTOR-RESISTOR	1	<R>
IC2103	AN3041SR	IC	1	<R>
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IC6001	BA6219BF	IC	1	<R>
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Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC6003	S3500B3	IC	1	<R>
IC6004	MN6755324M7J	IC	1	<R>
IC6005,6	UPD4071BG	IC	2	<R>
IC6007	SC14S66F	IC	1	<R>
IC6008	UPD4071BG	IC	1	<R>
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IC6011	SC7S08F	IC	1	<R>
L03	ELJFA181JB	COIL 180UH	1	
L03	ELJFC150JB	COIL 15UH	1	
L04	ELJFC100JB	COIL 10UH	1	
L04	VLQ0426J390	COIL 39UH	1	
L05	VLQ0163J820	COIL 82UH	1	
L1001	ELC6UB4R7M	COIL	1	
L1002	ELL04T034R	COIL	1	
L1003	ELC6UB4R7M	COIL	1	
L1004	ELJPA100KB	COIL 10UH	1	
L1007	ELL04T030R	COIL	1	
L1008	ELC6UB4R7M	COIL	1	
L1009	ELJPA100KB	COIL 10UH	1	
L1010,11	ELJPA101KB	COIL 100UH	2	
L1061,62	ELL04T031R	COIL	2	
L1063,64	ELJPA330KB	COIL 33UH	2	
L1065	ELJPA100KB	COIL 10UH	1	
L1102-04	ELJPA100KB	COIL 10UH	3	
L3001	ELJPA181KF	COIL	1	
L3002	ELJPA150KB	COIL 15UH	1	
L3003	VLQ0163J820	COIL 82UH	1	
L3004	VLQ0426J150	COIL 15UH	1	
L3005	VLQ0163J121	COIL 120UH	1	
L3006	VLQ0426J3R9	COIL 3.9UH	1	
L3007	VLQ0426J150	COIL 15UH	1	
L3009	ELJPA150KB	COIL 15UH	1	
L3010	VLQ0426J470	COIL 47UH	1	
L3011	VLQ0426J120	COIL 12UH	1	
L3012	VLQ0426J100	COIL 10UH	1	
L3015	VLQ0426J680	COIL 68UH	1	
L3017	VLQ0426J560	COIL 56UH	1	
L3018	ELJPA820KF	COIL	1	
L3019	ELJPA101KB	COIL 100UH	1	
L3021	VLQ0426J390	COIL 39UH	1	
L3024	ELJPA101KB	COIL 100UH	1	
L3025	ELJPC6R8KB	COIL	1	
L3030	VLQ0426J330	COIL 33UH	1	
L3501	ELJPA100KB	COIL 10UH	1	
L3502	ELJFA100JB	COIL	1	
L3503	ELJFA151JB	COIL	1	
L3504	VLQ0426J470	COIL 47UH	1	
L3505	ELJPA100KB	COIL 10UH	1	
L3506,07	ELJPA150KB	COIL 15UH	2	
L3508,09	ELJFC680JF	COIL	2	
L3510	VLQ0426J470	COIL 47UH	1	
L3511	VLQ0426J5R6	COIL	1	
L3801	ELJFA150KF	COIL	1	
L4001	VLQ0423J153	COIL 15MH	1	
L4002	ELJPA470KB	COIL 47UH	1	
L4501	ELJPA271KF	COIL	1	
L4502,03	ELJPA101KB	COIL 100UH	2	
L4504	VLQ0426J560	COIL 56UH	1	
L5001-03	ELJPA150KB	COIL 15UH	3	
L5004	ELJPA101KB	COIL 100UH	1	
L5005	VLQ0163J120	COIL 12UH	1	
L5006-08	ELJPA150KB	COIL 15UH	3	
L5501	VLQ0426J270	COIL 27UH	1	
L5502,03	VLQ0426J100	COIL 10UH	2	
L5504	ELJPA150KB	COIL 15UH	1	
L5505	ELJFC470JF	COIL	1	
L5506	VLQ0426J330	COIL 33UH	1	
L5507	ELJPA150KB	COIL 15UH	1	
L5512	ELJPA470KB	COIL 47UH	1	
L5513	VLQ0426J101	COIL 100UH	1	
L5514	VLQ0163J101	COIL 100UH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
L5515	VLQ0426J150	COIL 15UH	1	
L5516	ELJFB471KF	COIL	1	
L6001	VLQ0426J101	COIL 100UH	1	
L6002	VLQ0426J330	COIL 33UH	1	
L6003	ELJPA100KB	COIL 10UH	1	
L6004	VLQ0463	COIL	1	
L6005	ELJPA330KB	COIL 33UH	1	
P1001	VJP3327B002	CONNECTOR (MALE) 2P	1	
P3001	VJP3172B005	CONNECTOR (MALE) 5P	1	
P3002	VJP3172B009	CONNECTOR (MALE) 9P	1	
P4001	VJP3172B005	CONNECTOR (MALE) 5P	1	
P4001	VJS3172B005	CONNECTOR (FEMALE) 5P	1	
P4002	VJP3172B002	CONNECTOR (MALE) 2P	1	
P4301	VJS3172B005	CONNECTOR (FEMALE) 5P	1	
P4501	VJP3172B002	CONNECTOR (MALE) 2P	1	
P6001	VJP3172B004	CONNECTOR (MALE) 4P	1	
P6004,05	VJP3172B002	CONNECTOR (MALE) 2P	2	
P6006	VJP3172B003	CONNECTOR (MALE) 3P	1	
P6007,08	VJP3172B006	CONNECTOR (MALE) 6P	2	
P6009	VJP3172B008	CONNECTOR (MALE) 8P	1	
PP3501	VJP2963A014	CONNECTOR (MALE)	1	
PS3001	VJS2961A030	CONNECTOR (FEMALE) 30P	1	
PS3002	VJS2961A014	CONNECTOR (FEMALE) 14P	1	
PS5001	VJS2961A006	CONNECTOR (FEMALE) 6P	1	
PS6001	VJP3358C016	CONNECTOR (MALE) 16P	1	
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Q1001	2SB1202-S	TRANSISTOR	1	<R>
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Q1006	2SB970X	TRANSISTOR	1	<R>
Q1061,62	2SB956-R	TRANSISTOR	2	<R>
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Q2101	2SD1819	TRANSISTOR	1	<R>
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Q3508,09	2SB1218A	TRANSISTOR	2	<R>
Q3510,11	2SD1819A	TRANSISTOR	2	<R>

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
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Q3515	2SC3938	TRANSISTOR	1	<R>
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Q3809,10	XP1554	TRANSISTOR	2	<R>
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Q4502,03	XP4601	TRANSISTOR-TRANSISTOR	2	<R>
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Q5003	2SB970X	TRANSISTOR	1	<R>
Q5004,05	2SA812	TRANSISTOR	2	<R>
Q5006,07	XN4504	TRANSISTOR-TRANSISTOR	2	<R>
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QR3023	XN1501	TRANSISTOR-TRANSISTOR	1	<R>
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QR3901-3	UN5213	TRANSISTOR-RESISTOR	3	<R>
QR4001	XN4312	TRANSISTOR-TRANSISTOR	1	<R>
QR4002	UN5213	TRANSISTOR-RESISTOR	1	<R>
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QR4006	UN5213	TRANSISTOR-RESISTOR	1	<R>

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
QR4008	UN5217	TRANSISTOR-RESISTOR	1	<R>
QR4009	UN5113	TRANSISTOR-RESISTOR	1	<R>
QR4010	UN9213	TRANSISTOR-RESISTOR	1	<R>
QR4011	UN5213	TRANSISTOR-RESISTOR	1	<R>
QR4502	UN5110	TRANSISTOR-RESISTOR	1	<R>
QR4505	UN5215	TRANSISTOR-RESISTOR	1	<R>
QR5001	UN9213	TRANSISTOR-RESISTOR	1	<R>
QR5002,3	UN5212	TRANSISTOR-RESISTOR	2	<R>
QR5004	XP1213	TRANSISTOR-RESISTOR	1	<R>
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QR6003	UN9212	TRANSISTOR-RESISTOR	1	<R>
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QR6007	UN9213	TRANSISTOR-RESISTOR	1	<R>
QR6008	UN5213	TRANSISTOR-RESISTOR	1	<R>
QR6010	UN5112	TRANSISTOR-RESISTOR	1	<R>
QR6011,2	UN9112	TRANSISTOR-RESISTOR	2	<R>
QR6013	UN521E	TRANSISTOR-RESISTOR	1	<R>
QR6015	UN5211	TRANSISTOR-RESISTOR	1	<R>
QR6017	UN5213	TRANSISTOR-RESISTOR	1	<R>
QR6018	UN5211	TRANSISTOR-RESISTOR	1	<R>
R01	ERJ2GEJ102	M.RESISTOR CH 2W 1K	1	
R02	ERJ2GEJ152	M.RESISTOR CH 2W 1.5K	1	
R03	ERJ2GEJ103	M.RESISTOR CH 2W 10K	1	
R05	ERJ2GEJ242	M.RESISTOR CH 2W 2.4K	1	
R06	ERJ2GEJ682	M.RESISTOR CH 2W 6.8K	1	
R07	ERJ2GEJ563	M.RESISTOR CH 2W 56K	1	
R08	ERJ2GEJ473	M.RESISTOR CH 2W 47K	1	
R08	ERJ2GEJ561	M.RESISTOR CH 2W 560	1	
R09	ERJ2GEJ473	M.RESISTOR CH 2W 47K	1	
R09	ERJ2GEJ822	M.RESISTOR CH 2W 8.2K	1	
R10	ERJ2GEJ105	M.RESISTOR CH 2W 1M	1	
R12	ERJ2GEJ152	M.RESISTOR CH 2W 1.5K	1	
R12	ERJ2GEJ561	M.RESISTOR CH 2W 560	1	
R13	ERJ2GEJ822	M.RESISTOR CH 2W 8.2K	1	
R16	ERJ2GEJ242	M.RESISTOR CH 2W 2.4K	1	
R16	ERJ3GEYJ154	M.RESISTOR CH1/16W 150K	1	
R17	ERJ2GEJ392	M.RESISTOR CH 2W 3.9K	1	
R18	ERJ2GEJ102	M.RESISTOR CH 2W 1K	1	
R19	ERJ2GEJ182	M.RESISTOR CH 2W 1.8K	1	
R20	ERJ2GEJ181	M.RESISTOR CH 2W 180	1	
R23	ERJ2GEJ392	M.RESISTOR CH 2W 3.9K	1	
R24	ERJ2GEJ122	M.RESISTOR CH 2W 1.2K	1	
R24	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R25	ERJ2GEJ102	M.RESISTOR CH 2W 1K	1	
R26	ERJ2GEJ104	M.RESISTOR CH 2W 100K	1	
R27	ERJ2GEJ132	M.RESISTOR CH 2W 1.3K	1	
R27	ERJ2GEJ391	M.RESISTOR CH 2W 390	1	
R28	ERJ2GEJ102	M.RESISTOR CH 2W 1K	1	
R28	ERJ3GEYJ132	M.RESISTOR CH1/16W 1.3K	1	
R29	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R30	ERJ2GEJ222	M.RESISTOR CH 2W 2.2K	1	
R31	ERJ2GEJ122	M.RESISTOR CH 2W 1.2K	1	
R32	ERJ2GEJ681	M.RESISTOR CH 2W 680	1	
R33	ERJ2GEJ124	M.RESISTOR CH 2W 120K	1	
R37	ERJ2GEJ272	M.RESISTOR CH 2W 2.7K	1	
R40	ERJ2GEJ104	M.RESISTOR CH 2W 100K	1	
R40	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R41	ERJ2GEJ155	M.RESISTOR CH 2W 1.5M	1	
R42	ERJ2GEJ121	M.RESISTOR CH 2W 120	1	
R46	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R1001	ERJ6GEYG682	M.RESISTOR CH1/10W 6.8K	1	
R1002	ERJ6GEYG202	M.RESISTOR CH1/10W 2K	1	
R1003	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R1004	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R1005	ERJ6GEYG562	M.RESISTOR CH1/10W 5.6K	1	
R1006	ERJ6GEYG272	M.RESISTOR CH1/10W 2.7K	1	
R1007	ERJ8GEYJ101	M.RESISTOR CH 1/8W 100	1	
R1008	ERJ6GEYG103	M.RESISTOR CH1/10W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R1009	ERJ6GEYG152	M.RESISTOR CH1/10W 1.5K	1	
R1012	ERJ3GEYG163	M.RESISTOR CH1/16W 16K	1	
R1013	ERJ3GEYG393	M.RESISTOR CH1/16W 39K	1	
R1014,15	ERJ6GEYG182	M.RESISTOR CH1/10W 1.8K	2	
R1016	VRE0034E153	M.RESISTOR CH1/10W 15K	1	
R1017	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R1018	ERJ3GEYJ151	M.RESISTOR CH1/16W 150	1	
R1019	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R1020	ERJ3GEYJ151	M.RESISTOR CH1/16W 150	1	
R1021	ERJ3GEYJ680	M.RESISTOR CH1/16W 68	1	
R1022	ERJ3GEYJ560	M.RESISTOR CH1/16W 56	1	
R1023	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R1024	ERJ3GEYJ470	M.RESISTOR CH1/16W 47	1	
R1025,26	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R1027	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R1029	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R1030	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R1031	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	1	
R1032,33	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R1034	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R1035	ERJ3GEYJ470	M.RESISTOR CH1/16W 47	1	
R1036	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R1037	ERJ3GEYG470	M.RESISTOR CH1/16W 47	1	
R1061	ERJ6GEYJ391	M.RESISTOR CH1/10W 390	1	
R1062	ERJ6GEYJ681	M.RESISTOR CH1/10W 680	1	
R1063	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R1064,65	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	2	
R1066	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R1067	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R1068	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R1105	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R1106,07	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	2	
R1108	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R2101	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R2102-04	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	3	
R2105	ERJ8GEYJR33	M.RESISTOR CH 1/4W 0.33	1	
R2106	ERJ8GEYJR47	M.RESISTOR CH 1/8W 0.47	1	
R2107	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R2108	ERJ3GEYJ564	M.RESISTOR CH1/16W 560K	1	
R2109	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R2110	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R2111	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R2112	ERJ3GEYJ154	M.RESISTOR CH1/16W 150K	1	
R2113	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R2114	ERJ8GEYJ1R0	M.RESISTOR CH 1/8W 1	1	
R2115	ERJ8GEYJR47	M.RESISTOR CH 1/8W 0.47	1	
R2116,17	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R2118	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R2119	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R2121	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R2122	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R2123	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R2124	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R2125	ERJ3GEYJ820	M.RESISTOR CH1/16W 82	1	
R2126	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R2130	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3001	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3002	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R3003,04	ERJ3GEYG102	M.RESISTOR CH1/16W 1K	2	
R3005	ERJ3GEYG471	M.RESISTOR CH1/16W 470	1	
R3006	ERJ3GEYG332	M.RESISTOR CH1/16W 3.3K	1	
R3007	ERJ3GEYG152	M.RESISTOR CH1/16W 1.5K	1	
R3008	ERJ3GEYG332	M.RESISTOR CH1/16W 3.3K	1	
R3010	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R3011	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R3012	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3013	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R3014,15	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3016	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3017	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R3018	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3019	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R3021	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3022	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3023	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3024	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	1	
R3025	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3026	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3028	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R3030	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3031	ERJ3GEYJ151	M.RESISTOR CH1/16W 150	1	
R3032	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3033	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R3037	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3041	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R3042	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3043	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3045	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	1	
R3046	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3047	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3049	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R3051	ERJ6GEY0R00	M.RESISTOR CH1/10W 0	1	
R3052	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3054	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3055	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3056	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3059	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R3060-62	ERJ3GEYJ680	M.RESISTOR CH1/16W 68	3	
R3063	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R3064	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R3068,69	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R3070	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R3071	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3072	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R3073	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3074,75	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3076	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R3077	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3078	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3079	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R3080	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R3081	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3082	ERJ6GEY0R00	M.RESISTOR CH1/10W 0	1	
R3087	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3089	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R3090	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3091	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R3098	ERJ3GEYJ106	M.RESISTOR CH1/16W 10M	1	
R3102	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3103	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3104	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3107	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3109	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3112	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3113	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3115	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3117,18	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R3119	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3121	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3122	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3123	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3124	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3127	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R3128	ERJ3GEYJ474	M.RESISTOR CH1/16W 470K	1	
R3129	ERJ6GEYJ183	M.RESISTOR CH1/10W 18K	1	
R3135	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3136	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3137	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3142	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3144,45	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	2	
R3148	ERJ6GEYJ562	M.RESISTOR CH1/10W 5.6K	1	
R3149	ERJ6GEYJ223	M.RESISTOR CH1/10W 22K	1	
R3150	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3152	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R3153	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R3154	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R3155	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R3156	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R3157	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3160	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3162,63	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	2	
R3166	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3167	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3168	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3169	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R3170	ERJ3GEYJ224	M.RESISTOR CH1/16W 220K	1	
R3171	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3201	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R3202	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3203	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3221,22	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	2	
R3226	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3227	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R3228,29	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	2	
R3501,02	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	2	
R3503	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3504	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3505	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3506	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R3508	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R3509	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R3510	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R3511	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3512	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R3513	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R3514	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3515	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3516	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3517	VRE0071E113	M.RESISTOR CH1/16W 11K	1	
R3518	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R3519	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R3520	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3521	ERJ3GEYJ274	M.RESISTOR CH1/16W 270K	1	
R3522	ERJ3GEYJ564	M.RESISTOR CH1/16W 560K	1	
R3523	ERJ3GEYJ271	M.RESISTOR CH1/16W 270	1	
R3524	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3525	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R3526	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	1	
R3527,28	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3530	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3531,32	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	2	
R3533	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R3534	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3535	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3536	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3537	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3538	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R3539	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3540	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R3541	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3542	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	1	
R3543	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3544	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3545	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3546	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3547	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R3548	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3549	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3550	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3551	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3552	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3553	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R3554	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3555,56	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	2	
R3560	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3561	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R3562	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R3563	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R3564	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3565	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3566	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3567,68	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R3569	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3570	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R3571	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3572	ERJ3GEYJ154	M.RESISTOR CH1/16W 150K	1	
R3573	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R3574,75	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3580,81	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R3582	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3801,02	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	2	
R3803	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R3804	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3806	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	1	
R3807	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R3809	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3810,11	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	2	
R3812	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R3813	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3814	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3815	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R3816	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R3818,19	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3820,21	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	2	
R3822-25	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	4	
R3832	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3838,39	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	2	
R3840	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R3841	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R3843	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3844	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R3845	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3846-49	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	4	
R3901-03	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	3	
R4001	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R4002	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	1	
R4003	ERJ3GEYJ100	M.RESISTOR CH1/16W 10	1	
R4004	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R4005	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R4006	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R4007	ERJ3GEYJ820	M.RESISTOR CH1/16W 82	1	
R4008	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R4009	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R4010	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R4011	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R4012	ERJ3GEYJ123	M.RESISTOR CH1/16W 12K	1	
R4013	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R4014	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R4015	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R4016,17	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	2	
R4018	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R4019	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R4020	ERJ3GEYJ390	M.RESISTOR CH1/16W 39	1	
R4021	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R4022	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R4023	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R4024	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R4025	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R4026	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R4030,31	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R4032	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R4033	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R4034	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R4037	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R4041	ERJ6GEY0R00	M.RESISTOR CH1/10W 0	1	
R4043	ERJ3GEYJ225	M.RESISTOR CH1/16W 2.2M	1	
R4046,47	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	2	
R4059,60	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R4061,62	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	2	
R4063,64	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	2	
R4065	ERJ3GEYJ224	M.RESISTOR CH1/16W 220K	1	
R4067	ERJ3GEYJ224	M.RESISTOR CH1/16W 220K	1	
R4068	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R4069	ERJ3GEYJ224	M.RESISTOR CH1/16W 220K	1	
R4070	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R4071,72	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	2	
R4073	ERJ3GEYJ823	M.RESISTOR CH1/16W 82K	1	
R4074	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R4075,76	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	2	
R4077	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4078	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R4079,80	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	2	
R4081,82	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	2	
R4085	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R4089,90	ERJ3GEYJ123	M.RESISTOR CH1/16W 12K	2	
R4096	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R4501,02	ERJ6GEYJ330	M.RESISTOR CH1/10W 33	2	
R4503,04	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	2	
R4505	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R4506	ERJ6GEYJ270	M.RESISTOR CH1/10W 27	1	
R4507	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R4509	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R4510	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	1	
R4511	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R4512	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R4513-16	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	4	
R4518	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R4519	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R4520	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R4521	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R4522	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R4523	ERJ3GEYJ124	M.RESISTOR CH1/16W 120K	1	
R4524	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R4525	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R4526	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R4527	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R4528	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R4529	ERJ3GEYJ124	M.RESISTOR CH1/16W 120K	1	
R4531	ERJ6GEYJ270	M.RESISTOR CH1/10W 27	1	
R4532	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R4533	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R4534	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R4535	ERJ8GEYJ330	M.RESISTOR CH 1/8W 33	1	
R4536	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R4537	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R4538	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R4539	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R4540	ERJ3GEYJ561	M.RESISTOR CH1/16W 560	1	
R4541	ERJ3GEYJ124	M.RESISTOR CH1/16W 120K	1	
R5001	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R5002	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R5003	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R5004-07	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	4	
R5008-11	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	4	
R5012	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R5013	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R5014	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	1	
R5015	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R5016-19	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	4	
R5020-23	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	4	
R5024	ERJ3GEYJ4R7	M.RESISTOR CH1/16W 4.7	1	
R5025	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	1	
R5026	ERJ3GEYJ181	M.RESISTOR CH1/16W 180	1	
R5027	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R5028	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R5029,30	ERJ3GEYJ100	M.RESISTOR CH1/16W 10	2	
R5031	ERJ3GEYJ394	M.RESISTOR CH1/16W 390K	1	
R5032	ERJ3GEYJ184	M.RESISTOR CH1/16W 180K	1	
R5033,34	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R5035	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	1	
R5036	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R5037	ERJ3GEYJ394	M.RESISTOR CH1/16W 390K	1	
R5038	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R5039	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R5040-42	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	3	
R5043-45	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	3	
R5046-48	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	3	
R5049	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R5050	ERJ3GEYJ474	M.RESISTOR CH1/16W 470K	1	
R5051	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R5052	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R5053	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R5054	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R5055	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R5066-71	ERJ3GEYJ394	M.RESISTOR CH1/16W 390K	0006	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R5074	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R5501	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	1	
R5502	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R5503	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R5514,15	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R5516	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R5517	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R5530	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R5532	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R5544	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R5545	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R5554	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R5557,56	ERJ3GEYJ474	M.RESISTOR CH1/16W 470K	2	
R5562	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R5564	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R5565	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R5566	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R5567	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R5570	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R5571,72	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R5590	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R5591	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R5592	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R5593	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R5594	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R5596	ERJ3GEYJ123	M.RESISTOR CH1/16W 12K	1	
R5601	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R5602	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	1	
R5603	ERJ3GEYJ151	M.RESISTOR CH1/16W 150	1	
R5604	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R5611	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R6001,02	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R6003,04	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	2	
R6005	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R6006,07	ERJ3GEYJ184	M.RESISTOR CH1/16W 180K	2	
R6008	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R6009	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R6014	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R6015	VRE0067G473	M.RESISTOR 47K	1	
R6016	VRE0067G153	M.RESISTOR 15K	1	
R6017,18	ERJ8GEYJ101	M.RESISTOR CH 1/8W 100	2	
R6019-21	ERJ8GEYJ151	M.RESISTOR CH 1/8W 150	3	
R6022	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6023	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R6024	ERJ3GEYJ394	M.RESISTOR CH1/16W 390K	1	
R6025,26	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	2	
R6027	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R6028-30	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	3	
R6031	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R6032-36	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	5	
R6037	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	1	
R6038-42	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	5	
R6043	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R6044	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	1	
R6045	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R6046-49	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	4	
R6050	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R6051-53	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	3	
R6054-62	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	9	
R6063	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	1	
R6065,66	ERJ3GEYJ184	M.RESISTOR CH1/16W 180K	2	
R6067,68	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R6069	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R6070	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6071	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R6072-78	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	7	
R6079	ERJ8GEYJ100	M.RESISTOR CH 1/8W 10	1	
R6080,81	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	2	
R6082	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6083,84	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	2	
R6085,86	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	2	
R6087	ERJ8GEYJ221	M.RESISTOR CH 1/8W 220	1	
R6088,89	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R6090	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	1	
R6091	ERJ8GEYJ271	M.RESISTOR CH 1/8W 270	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R6092	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R6093	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R6095	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R6096	ERJ8GEYJ331	M.RESISTOR CH 1/8W 330	1	
R6097	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R6098	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R6099	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R6100	ERJ3GEYJ330	M.RESISTOR CH1/16W 33	1	
R6101	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R6102	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R6103	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R6104	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R6105	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R6106,07	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	2	
R6108	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R6109-12	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	4	
R6113	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6114,15	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	2	
R6116	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R6121	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R6122	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R6125,26	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R6127	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R6128	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R6129	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6130	ERJ8GEY0R00	M.RESISTOR CH 1/8W 0	1	
R6201	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R6202	ERJ3GEYJ114	M.RESISTOR CH1/16W 110K	1	
R6203	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R6204	ERJ3GEYJ181	M.RESISTOR CH1/16W 180	1	
R6205-07	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	3	
R6208	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6209	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R6210,11	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R6212	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R6213	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R6214	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R6215,16	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	2	
R6217	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R6218	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R6219	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R6220	ERJ3GEYJ683	M.RESISTOR CH1/16W 68K	1	
T1001	ELL04T032R	TRANSFORMER	1	
T4001	EIQ6QB006	TRANSFORMER	1	
VR1001	EVM7JSX30B52	V.RESISTOR 500	1	
VR1002	EVM7JSX30B13	V.RESISTOR 1K	1	
VR1003	EVM7JSX30DE2	V.RESISTOR	1	
VR3001	EVM7JSX30B13	V.RESISTOR 1K	1	
VR3004	EVM7JSX30B14	V.RESISTOR 10K	1	
VR3005	EVM7JSX30B23	V.RESISTOR 2K	1	
VR3006	EVM7JSX30B14	V.RESISTOR 10K	1	
VR3007	EVM7JSX30B54	V.RESISTOR 50K	1	
VR3008	EVM7JSX30B13	V.RESISTOR 1K	1	
VR3501	EVM7JSX30B14	V.RESISTOR 10K	1	
VR3503	EVM7JSX30B53	V.RESISTOR 5K	1	
VR3504	EVM7JSX30B13	V.RESISTOR 1K	1	
VR3505	EVM7JSX30B24	V.RESISTOR 20K	1	
VR3802	EVM7JSX30B13	V.RESISTOR 1K	1	
VR4001	EVM7JSX30B52	V.RESISTOR 500	1	
VR4002	EVM7JSX30B54	V.RESISTOR 50K	1	
VR4501,2	EVM7JSX30B23	V.RESISTOR 2K	2	
VR5501	EVM7JSX30B23	V.RESISTOR 2K	1	
VR6201	EVM7JSX30B15	V.RESISTOR 100K	1	
X3801	VSX0444	CRYSTAL OSCILLATOR	1	<R>
X5501	VSX0419	CRYSTAL OSCILLATOR	1	<R>
X6002	VSX0461	CRYSTAL OSCILLATOR	1	<R>

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
X6003	VSX0510	CRYSTAL OSCILLATOR	1	<R>
		MISCELLANEOUS		
	VSC3639	SHIELD CASE (POWER A)	1	
	VSC3640	SHIELD CASE (POWER B)	1	
	VSC3630	SHIELD CASE (HEAD AMP A)	1	
	VSC3631	SHIELD CASE (HEAD AMP B)	1	
	VSC4253	SHIELD PLATE	1	
	VMZ2390	INSULATION SHEET (A)	1	
	VMZ2392	INSULATION SHEET (C)	1	
	VKC0412	POST	1	
	VMZ2084	INSULATION SHEET	1	
	VMX2571	PC SUPPORT	2	
	X1B2+5G	SCREW	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP22117A	P.C.BOARD W/COMPONENT		
		CCD DRIVE		
B201	VJP3159A032	CONNECTOR (MALE) 32P	1	
B202	VJP2962C012	CONNECTOR (MALE)	1	
C201	ECST1CX685Z	T.CAPACITOR CH 16V 68U	1	
C202,03	ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C204	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C205	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C206,07	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C209	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C210	ECST1VX155Z	T.CAPACITOR CH 35V 1.5U	1	
C211	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C212	ECST1VX225Z	T.CAPACITOR CH 35V 2.2U	1	
C213,14	ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C215	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C216,17	ECUX1H270JCV	C.CAPACITOR CH 50V 27P	2	
C218	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C220	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C221	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C222	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	1	
C223	ECRJA020E11	TRIMMER 2P	1	
C224	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C226	ECUM1C185ZFN	C.CAPACITOR CH 16V 1.8U	1	
C227,28	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	2	
C229	ECEV0GA330	E.CAPACITOR CH 4V 33U	1	
C230	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C231,32	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C233	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C234	ECUM1C185ZFN	C.CAPACITOR CH 16V 1.8U	1	
C235	ECST1CX685Z	T.CAPACITOR CH 16V 68U	1	
C236	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C237	ECST0GY106Z	T.CAPACITOR CH 4V 10U	1	
C238-40	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C241	ECUX1H180JCV	C.CAPACITOR CH 50V 18P	1	
C242	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C243	ECUX1H473ZFV	C.CAPACITOR CH 50V 0.047U	1	
C244	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C245	ECST1CX685Z	T.CAPACITOR CH 16V 68U	1	
C246	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C247	ECUX1H060CCV	C.CAPACITOR CH 50V 6P	1	
C248	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C249	ECUX1H050CCV	C.CAPACITOR CH 50V 5P	1	
C251	ECST1VX155Z	T.CAPACITOR CH 35V 1.5U	1	
C252	ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C254	ECUX1H100CCV	C.CAPACITOR CH 50V 10P	1	
C258,59	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C260,61	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	2	
C262	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C263	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C264	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C266	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C267-69	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C270	ECUX1H050CCV	C.CAPACITOR CH 50V 5P	1	
C271	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
D201	MA110	DIODE	1	<R>
D203,04	MA110	DIODE	2	<R>
D205	MA728	DIODE	1	<R>
D206,07	MA110	DIODE	2	<R>
D209	MA110	DIODE	1	<R>
FL201	ELB3H010	FILTER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC201	MN5188	IC	1	<R>
IC202	MN3110SA	IC	1	<R>
IC203	AN2013SB	IC	1	<R>
IC204	AN2032FAP	IC	1	<R>
IC205	LM358DB	IC	1	<R>
L201-07	ELJFC150KB	COIL	7	
L208	VLQ0426J330	COIL 33UH	1	
L209	VLQ0556	COIL	1	
L210	ELJFC150KB	COIL	1	
L211,12	VLQ0556	COIL	2	
L214,15	VLQ0555	COIL	2	
L221	VLQ0401K4R7	COIL 4.7UH	1	
L222	ELJFC3R3KB	COIL 3.3UH	1	
L224	VLQ0555	COIL	1	
Q201	XP4654	TRANSISTOR-TRANSISTOR	1	<R>
Q202,03	2SD1819	TRANSISTOR	2	<R>
Q205	XP4654	TRANSISTOR-TRANSISTOR	1	<R>
Q206	XN4601	TRANSISTOR-TRANSISTOR	1	<R>
Q207	XP4654	TRANSISTOR-TRANSISTOR	1	<R>
Q211	2SB1218	TRANSISTOR	1	<R>
Q214	2SD1819	TRANSISTOR	1	<R>
Q215	XN4601	TRANSISTOR-TRANSISTOR	1	<R>
Q219	2SB1218	TRANSISTOR	1	<R>
R201	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R202	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R203	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R204	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R206	ERJ3GEYJ181	M.RESISTOR CH1/16W 180	1	
R209	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R210	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R211	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R212	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R214	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R215	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R216	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R218	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	1	
R219	ERJ3GEYJ330	M.RESISTOR CH1/16W 33	1	
R220	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	1	
R221	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R223	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R224	ERJ3GEYJ330	M.RESISTOR CH1/16W 33	1	
R225	ERJ3GEYJ154	M.RESISTOR CH1/16W 150K	1	
R226	ERJ3GEYJ684	M.RESISTOR CH1/16W 680K	1	
R227	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	1	
R228	ERJ3GEYJ274	M.RESISTOR CH1/16W 270K	1	
R229	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R230	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R232	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R236	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R237	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R239	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R241	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R242	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R243	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R244	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R245	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R249	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R253	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R254	ERJ3GEYJ824	M.RESISTOR CH1/16W 820K	1	
R255,56	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	2	
R257	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R258	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R259	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R265	ERJ3GEYJ332	M.RESISTOR CH1/16W 3.3K	1	
R266	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R267	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R268	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	1	
R269	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R270	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R271	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R272	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R273	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R274-76	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	3	
R277	VRE0071E123	M.RESISTOR CH1/16W 12K	1	
R278	VRE0071E823	M.RESISTOR CH1/16W 82K	1	
R279	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R280	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R281,82	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	2	
R283-89	ERJ3GEYJ330	M.RESISTOR CH1/16W 33	7	
R290	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R291	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R292	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R293	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
X201	VSX0530	CRYSTAL OSCILLATOR	1	<R>
		MISCELLANEOUS		
	VSC3635	SHIELD CASE (SENSOR A)	1	
	VSC3636	SHIELD CASE (SENSOR B)	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP23404A	P.C.BOARD W/COMPONENT PROCESS		
C305-08	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	4	
C309	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C310	ECUX1H150JCV	C.CAPACITOR CH 50V 15P	1	
C311	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C312	ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
C313	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C314,15	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	2	
C317	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C318	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C321	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C322	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C323	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C324	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C325	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C326	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C328,29	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	2	
C330,31	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	2	
C334	ECST0GY106Z	T.CAPACITOR CH 4V 10U	1	
C335	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C336	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C337,38	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	2	
C339	ECUX1H181JCV	C.CAPACITOR CH 50V 180P	1	
C340	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C341,42	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C343	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C357	ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
C358-62	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	5	
C363	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	1	
C380,81	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	2	
C701	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C703	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C704	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C705	ECUX1C683ZFV	C.CAPACITOR CH 16V 0.068U	1	
C706-09	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	4	
C710	ECUX1H473ZFV	C.CAPACITOR CH 50V 0.047U	1	
C711	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C712	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C713,14	ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	2	
C715	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C716	ECUM1C224ZFN	C.CAPACITOR CH 16V 0.22U	1	
C717	ECST1CY335Z	T.CAPACITOR CH 16V 3.3U	1	
C718	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C719	ECST0GY106Z	T.CAPACITOR CH 4V 10U	1	
C720,21	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	2	
C722-24	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	3	
C726	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C727	ECEV1EA330	E.CAPACITOR CH 25V 33U	1	
C728	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C729,30	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C731	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C732	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C733	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C734	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	1	
C738	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C746	ECUM1C225ZFM	C.CAPACITOR CH 16V 2.2U	1	
C747	ECEV0JA470	E.CAPACITOR CH6.3V 47U	1	
C748	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C750	ECST1AX106Z	T.CAPACITOR CH 10V 10U	1	
D301	1SS355	DIODE	1	<R>
D302	MA728	DIODE	1	<R>
D701	1SS355	DIODE	1	<R>
FL301	VLF1067	FILTER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
FP301	VJS2958B017	CONNECTOR (FEMALE) 17P	1	
FP701	VJS2959B024	CONNECTOR (FEMALE) 24P	1	
IC305	SC7S04F	IC	1	<R>
IC306	MN6732	IC	1	<R>
IC307	MN655431SH	IC	1	<R>
IC308	MN73512XWAS	IC	1	<R>
IC309	MN1882010M7G	IC	1	<R>
IC310	AK6420HF	IC	1	<R>
IC311	MN13821-Y	IC	1	<R>
IC312	MN1882010V6K	IC	1	<R>
IC315	MN657011H	IC	1	<R>
IC317	AN2040SB	IC	1	<R>
IC330	MB88346BPFV	IC	1	<R>
IC701	MN12821Q	IC	1	<R>
IC702	MN6782M7K	IC	1	<R>
IC703	AN2585FAP	IC	1	<R>
IC704	NJM2904V	IC	1	<R>
IC705	LM324DB	IC	1	<R>
IC706	AN6663S	IC	1	<R>
IC707	AN6545SP	IC	1	<R>
IC708	TB6504F	IC	1	<R>
IC709	SC7S08F	IC	1	<R>
L301,02	VLP0146	COIL	2	
L305	ELJFC150KB	COIL	1	
L306-11	ELJPC6R8KB	COIL	6	
L312	VLQ0291	COIL	1	
L313,14	ELJPCGR8KB	COIL	2	
L316	ELJPC6R8KB	COIL	1	
L320	VLQ0426J330	COIL 33UH	1	
L322	VLQ0426J5R6	COIL	1	
L324	VLQ0584	COIL	1	
L325,26	VLP0140	COIL	2	
L327	VLQ0584	COIL	1	
L328	VLP0140	COIL	1	
L702	ELJPA101KB	COIL 100UH	1	
L703	ELJFC150KB	COIL	1	
L704	ELJFA150KF	COIL	1	
L705	ELJPA150KB	COIL 15UH	1	
P301	VJP3172B004	CONNECTOR (MALE) 4P	1	
P305	VJP3172B005	CONNECTOR (MALE) 5P	1	
P701	VJP3172B003	CONNECTOR (MALE) 3P	1	
P701	VJS3172B003	CONNECTOR (FEMALE) 3P	1	
P4302	VJS3172B003	CONNECTOR (FEMALE) 3P	1	
PP301	VJS3024C032	CONNECTOR	1	
PP302	VJP2962A030	CONNECTOR (MALE) 30P	1	
PP303	VJP2962A024	CONNECTOR (MALE) 24P	1	
Q301	XP4601	TRANSISTOR	1	<R>
Q305	2SC4176	TRANSISTOR	1	<R>
Q701	2SD1819	TRANSISTOR	1	<R>
Q702	2SD2210	TRANSISTOR	1	<R>
QR301	UN5213	TRANSISTOR-RESISTOR	1	<R>
QR701,02	UN5211	TRANSISTOR-RESISTOR	2	<R>
R301	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R302,03	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	2	
R304	ERJ3GEYJ271	M.RESISTOR CH1/16W 270	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R305	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R307	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R308,09	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	2	
R310	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R311	ERJ3GEYJ560	M.RESISTOR CH1/16W 56	1	
R313	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R314	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R315-17	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	3	
R318	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R319	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R320	ERJ3GEYJ151	M.RESISTOR CH1/16W 150	1	
R321,22	ERJ3GEYJ121	M.RESISTOR CH1/16W 120	2	
R323-26	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	4	
R328,29	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	2	
R331-34	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	4	
R335	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R337	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R338	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R339	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R341	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	1	
R342,43	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R344-47	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	4	
R348-50	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	3	
R351,52	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R353-55	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	3	
R357-59	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	3	
R360	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R361	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R362,63	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R364	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R365-71	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	7	
R374-81	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	8	
R382,83	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R384	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R386	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R387-89	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	3	
R390,91	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R392	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R393	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R394	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R397	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R398	ERJ3GEYJ181	M.RESISTOR CH1/16W 180	1	
R399-02	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	4	
R403	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R404	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R405	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R406	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R407	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R409	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R414-17	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	4	
R424	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R425	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R450,51	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	2	
R460-62	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	3	
R500	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R502	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R503	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R505	ERJ6GEYJ102	M.RESISTOR CH1/16W 1K	1	
R701	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R702	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R703	ERJ3GEYG332	M.RESISTOR CH1/16W 3.3K	1	
R704,05	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	2	
R706	ERJ3GEYG562	M.RESISTOR CH1/16W 5.6K	1	
R707	ERJ3GEYG332	M.RESISTOR CH1/16W 3.3K	1	
R708	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R710	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R711	ERJ3GEYG103	M.RESISTOR CH1/16W 10K	1	
R712	ERJ3GEYG303	M.RESISTOR CH1/16W 30K	1	
R713	ERJ3GEYJ124	M.RESISTOR CH1/16W 120K	1	
R714	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R715	ERJ3GEYJ823	M.RESISTOR CH1/16W 82K	1	
R716	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R717,18	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	2	
R719	ERJ3GEYJ154	M.RESISTOR CH1/16W 150K	1	
R720	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R721	ERJ3GEYJ225	M.RESISTOR CH1/16W 2.2M	1	
R722	ERJ3GEYJ152	M.RESISTOR CH1/16W 1.5K	1	
R723	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R724	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R725	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R726	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R727	ERJ3GEYJ123	M.RESISTOR CH1/16W 12K	1	
R728	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R729	ERJ3GEYJ123	M.RESISTOR CH1/16W 12K	1	
R730	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R731	ERJ3GEYJ181	M.RESISTOR CH1/16W 180	1	
R732-34	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	3	
R735	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R736	ERJ3GEYJ823	M.RESISTOR CH1/16W 82K	1	
R738	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R739	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R740	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R741,42	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R743	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R744	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R745	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R746	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R747,48	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	2	
R749	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R750	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R751	ERJ3GEYJ4R7	M.RESISTOR CH1/16W 4.7	1	
R752	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R753	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R754	ERJ3GEYJ4R7	M.RESISTOR CH1/16W 4.7	1	
R755	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R756	ERJ3GEYJ153	M.RESISTOR CH1/16W 15K	1	
R757	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R759,60	ERJ3GEYJ101	M.RESISTOR CH1/16W 100	2	
R761	ERJ8GEYJ680	M.RESISTOR CH 1/8W 68	1	
R762-64	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	3	
TH701	VRT0032K152	THERMISTOR	1	
VR701	EVM7JSX30B54	V.RESISTOR 50K	1	
X301,02	EF0V8004B0A	CRYSTAL OSCILLATOR	2	<R>
X701	EF0V6754B0A	CRYSTAL OSCIILATOR	1	<R>
X702	EF0V8004B0A	CRYSTAL OSCILLATOR	1	<R>
		MISCELLANEOUS		
	VSC3637	SHIELD CASE (PROCESS A)	1	
	VSC4471	SHIELD CASE (PROCESS B)	1	
	VEE7791	WIRE CABLE	1	
	VMZ2077	BARRIER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEK5865	P.C.BOARD W/COMPONENT		
		CHARA/GENE		
P1402	VJJ0163	CONNECTOR	1	
P3001	VJS3172B005	CONNECTOR (FEMALE) 5P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP06817A	P.C.BOARD W/COMPONENT		
		VTR OPERATION (A)		
	VEP06847B	P.C.BOARD W/COMPONENT		
		VTR OPERATION (B)		
D6501-06	MA165VT	DIODE	6	<R>
D6507	BR3668S	DIODE	1	<R>
D6508	MA165VT	DIODE	1	<R>
D6510-16	MA165VT	DIODE	7	<R>
FP6501	VJS2135	CONNECTOR (FEMALE)	1	
SW6501-7	EVQ21504K	SWITCH	7	<R>
SW6508-9	EVQQSB04B	SWITCH	2	<R>
SW6510	VST0098	SWITCH	1	<R>
SW6511	ESD11V120	SLIDE SWITCH	1	<R>
SW6512	EVQ21504K	SWITCH	1	<R>
SW6514,5	EVQQSB04B	SWITCH	2	<R>
SW6516	EVQQFR02K	SWITCH	1	<R>
SW6517	ESD100121AQ	SWITCH	1	<R>
		MISCELLANEOUS		
	VWJ06C0040AA	FLEXIBLE CONNECTOR	1	
	VWJ0610	FLEXIBLE CABLE	1	
	VEP22118A	P.C.BOARD W/COMPONENT		
		CCD		
B291	VJS2961A012	CONNECTOR (FEMALE) 12P	1	
C292	ECST1VX225Z	T.CAPACITOR 35V 2.2V	1	
C293,94	ECUM1E473ZFN	C.CAPACITOR 25V 0.047U	2	
C295	ECUM1E1047FN	C.CAPACITOR 25V 0.1U	1	
D291	MA153	DIODE	1	
Q291	2SC2295	TRANSISTOR	1	
R291	ERJ6GEYF560	M.RESISTOR 56K	1	
R292	ERJ6GEYF472	M.RESISTOR 4.7K	1	
		MISCELLANEOUS		
	VJB22118	CCD FLEXIBLE	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP03D37A	P.C.BOARD W/COMPONENT		
		AV JACK (A)		
C1501	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C1503	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C1505	ECUM1H102KBM	C.CAPACITOR 50V 1000P	1	
C1506	ECUM1H222KBM	C.CAPACITOR CH 50V 2200P	1	
C1507	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C1508	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	1	
C1509	ECUM1C1057FN	C.CAPACITOR CH 16V 1U	1	
D1501,02	MA153	DIODE	2	<R>
FP1501	VJS2139	CONNECTOR (FEMALE)	1	
L1503,04	VLQ0555	COIL	2	
P1501	VJP1244T	CONNECTOR (MALE) 4P	1	
R1502,03	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	2	
R1504	ERJ3GEYJ123	M.RESISTOR CH1/16W 12K	1	
SW1501	VSS0187	SWITCH	1	<R>
SW1502	VSS0186	SWITCH	1	<R>
		MISCELLANEOUS		
	VEJ1288	AV JACK PLATE	1	
	VGU3435	SLIDE KNOB	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP03957C	P.C.BOARD W/COMPONENT		
		AV JACK (B)		
D1603	31DQ04FC6	DIODE	1	<R>
D1605	MA715	DIODE	1	<R>
L1601,02	VLP0113	COIL	2	
P1001	VJS1229T	CONNECTOR (FEMALE)	1	
P1601	VJP3318A006	CONNECTOR (MALE) 6P	1	
P1601	VJS3172B006	CONNECTOR (FEMALE) 6P	1	
P1602	VJP1231T	CONNECTOR (MALE) 4P	1	
P1604	VJP1229R	CONNECTOR (MALE) 2P	1	
P6008	VJS3172B006	CONNECTOR (FEMALE) 6P	1	
PJ1605	VJP1253	CONNECTOR (MALE) 2P	1	
R1606	VSF0059	FUSE	1	<!>
R1607	ERJ3GEYJ181	M.RESISTOR CH1/16W 180	1	
Z1601	VL2020/1HF	BATTERY	1	
		MISCELLANEOUS		
	VEE8184	WIRE CABLE	1	
	VEE7788	WIRE CABLE	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEK7280	P.C.BOARD W/COMPONENT		
		RT-FPC U		
		MISCELLANEOUS		
	VJF0964	RT CONNECTOR	1	
	VES0689	P.C.BOARD W/COMPONENT		
		MECHA CONNECTION		
		MISCELLANEOUS		
	VMX1280	SENSOR SPACER	1	
	ON2170	PHOTO INTERRUPTER	1	
	VSS0193	MODE SWITCH	1	
	VJP3318A008	CONNECTOR	1	
	VEE2015	WIRE CABLE	1	
	VJP1229R	CONNECTOR	1	
	VEK6035	P.C.BOARD W/COMPONENT		
		PHOTO HOLDER (L)		
P6006	VJS3172B003	CONNECTOR (FEMALE) 3P	1	
		MISCELLANEOUS		
	PN158NVNC	PHOTO TRANSISTOR	1	
	VMD0607	PHOTO HOLDER	1	
	VSH0026	SWITCH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEK6098	P.C.BOARD W/COMPONENT		
		PHOTO HOLDER (R)		
P6001	VJS3172B004	CONNECTOR (FEMALE) 4P	1	
		MISCELLANEOUS		
	PN158NV	PHOTO TRANSISTOR	1	
	VMD0606	PHOTO HOLDER	1	
	VSQ0808	DEW DETECTOR	1	
	VES0690	DETECTION SWITCH	1	
	VEK5868	P.C.BOARD W/COMPONENT		
		FE HEAD		
C1901	ECEA1CKS100	E.CAPACITOR 16V 10U	1	
C1902	VCYD1E103MR	S.CAPACITOR 25V 0.01U	1	
C1903	VCYD1E682KH	S.CAPACITOR 25V 6800P	1	
C1904	ECQV1H563JZ	P.CAPACITOR 50V 0.056U	1	
L1901	VLQEL05F221K	COIL 220UH	1	
Q1901	2SC2603AE2F	TRANSISTOR	1	
R1901	ERDS2TJ822	C.RESISTOR 1/4W 8.2K	1	
T1901	VLQ0586	TRANSFORMER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP03D31A	P.C.BOARD W/COMPONENT		
		TBC		
C3501	ECST0JX226Z	T.CAPACITOR CH6.3V 22U	1	
C3502,03	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	2	
C3504	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C3505	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3506	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3507	ECUM1H103KBM	C.CAPACITOR CH 50V 0.01U	1	
C3508	ECUX1C223KBV	C.CAPACITOR CH 16V 0.022U	1	
C3509	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C3510	ECUM1C224KBN	C.CAPACITOR CH 16V 0.22U	1	
C3511	ECST0JC476Z	E.CAPACITOR CH6.3V 470M	1	
C3512	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3513	ECST1AY475Z	T.CAPACITOR CH 16V 4.7U	1	
C3514	ECUX1H332KBV	C.CAPACITOR CH 50V 3300P	1	
C3515	ECUM1H103JCM	C.CAPACITOR CH 50V 0.01U	1	
C3516	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3517	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3518	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	
C3519	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3520	ECUX1C153KBV	C.CAPACITOR CH 16V 0.015U	1	
C3521	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C3522	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3523	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3524,25	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	2	
C3526	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	1	
C3527	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C3528	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3529	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	1	
C3530-33	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	4	
C3534	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C3535	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3536,37	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	2	
C3538	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3539	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3540	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3541	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	1	
C3542	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3543	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3544	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3545	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3546	ECST0JY106Z	T.CAPACITOR CH6.3V 10U	1	
C3547	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3548	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C3549	ECUM1C224KBN	C.CAPACITOR CH 16V 0.22U	1	
C3550	ECST0JC476Z	E.CAPACITOR CH6.3V 470M	1	
C3551	ECST1DX475Z	T.CAPACITOR CH 20V 4.7U	1	
C3552	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C3553	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C3554	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	1	
C3556	ECUM1C105MBM	C.CAPACITOR CH 16V 1U	1	
C3561	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C3562	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	1	
C3563	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	1	
C3580	ECUX1C683KBV	C.CAPACITOR 16V 0.068U	1	
D3501	MA143A	DIODE	1	
D3502	1SS355	DIODE	1	
D3503	MA143A	DIODE	1	
D3504	1SS355	DIODE	1	
FL3501	VLF1030	FILTER	1	
IC3501	TA8868AF	IC	1	
IC3502	MN3802AS	IC	1	
IC3503	MN3851MS	IC	1	
IC3504	BU4066BCFV	IC	1	
IC3505	TA75W01FU	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
L3501	ELJPA100KB	COIL 10UH	1	
L3502	ELJFA100JB	COIL	1	
L3503	ELJFA151JB	COIL	1	
L3504	VLQ0426J470	COIL 47UH	1	
L3505	ELJPA100KB	COIL 10UH	1	
L3506,07	ELJPA150KB	COIL 15UH	2	
L3508,09	ELJFC680JF	COIL	2	
L3510	VLQ0426J470	COIL 47UH	1	
L3511	VLQ0426J5R6	COIL	1	
PP3501	VJP2963A014	CONNECTOR (MALE)	1	
Q3501	2SD1819A	TRANSISTOR	1	
Q3502-04	2SB1218A	TRANSISTOR	3	
Q3505	2SD1819A	TRANSISTOR	1	
Q3506	2SB970X	TRANSISTOR	1	
Q3507	2SD1819A	TRANSISTOR	1	
Q3508,09	2SB1218A	TRANSISTOR	2	
Q3510,11	2SD1819A	TRANSISTOR	2	
Q3513	2SD1819A	TRANSISTOR	1	
Q3514	2SB1218A	TRANSISTOR	1	
Q3515	2SC3938	TRANSISTOR	1	
Q3516-18	2SD1819A	TRANSISTOR	3	
Q3519	2SC3931	TRANSISTOR	1	
Q3520	2SD1819A	TRANSISTOR	1	
QR3501	UN5212	TRANSISTOR-RESISTOR	1	
QR3503	UN5212	TRANSISTOR-RESISTOR	1	
QR3504	UN5211	TRANSISTOR-RESISTOR	1	
R3501,02	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	2	
R3503	ERJ3GEY0R00	M.RESISTOR CH1/16W 0	1	
R3504	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3505	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3506	ERJ3GEYJ272	M.RESISTOR CH1/16W 2.7K	1	
R3508	ERJ3GEYJ822	M.RESISTOR CH1/16W 8.2K	1	
R3509	ERJ3GEYJ392	M.RESISTOR CH1/16W 3.9K	1	
R3510	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R3511	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3512	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R3513	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	1	
R3514	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3515	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3516	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3517	VRE0071E113	M.RESISTOR CH1/16W 11K	1	
R3518	ERJ3GEYJ334	M.RESISTOR CH1/16W 330K	1	
R3519	ERJ3GEYJ681	M.RESISTOR CH1/16W 680	1	
R3520	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3521	ERJ3GEYJ274	M.RESISTOR CH1/16W 270K	1	
R3522	ERJ3GEYJ564	M.RESISTOR CH1/16W 560K	1	
R3523	ERJ3GEYJ271	M.RESISTOR CH1/16W 270	1	
R3524	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3525	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	1	
R3526	ERJ3GEYJ821	M.RESISTOR CH1/16W 820	1	
R3527,28	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3530	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3531,32	ERJ3GEYJ273	M.RESISTOR CH1/16W 27K	2	
R3533	ERJ3GEYJ183	M.RESISTOR CH1/16W 18K	1	
R3534	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3535	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3536	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3537	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3538	ERJ3GEYJ682	M.RESISTOR CH1/16W 6.8K	1	
R3539	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3540	ERJ3GEYJ393	M.RESISTOR CH1/16W 39K	1	
R3541	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3542	ERJ3GEYJ391	M.RESISTOR CH1/16W 390	1	
R3543	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3544	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3545	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3546	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3547	ERJ3GEYJ333	M.RESISTOR CH1/16W 33K	1	
R3548	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3549	ERJ3GEYJ182	M.RESISTOR CH1/16W 1.8K	1	
R3550	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3551	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3552	ERJ3GEYJ104	M.RESISTOR CH1/16W 100K	1	
R3553	ERJ3GEYJ105	M.RESISTOR CH1/16W 1M	1	
R3554	ERJ3GEYG472	M.RESISTOR CH1/16W 4.7K	1	
R3555,56	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	2	
R3560	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	1	
R3561	ERJ3GEYJ331	M.RESISTOR CH1/16W 330	1	
R3562	ERJ3GEYJ221	M.RESISTOR CH1/16W 220	1	
R3563	ERJ3GEYJ563	M.RESISTOR CH1/16W 56K	1	
R3564	ERJ3GEYJ103	M.RESISTOR CH1/16W 10K	1	
R3565	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
R3566	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3567,68	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R3569	ERJ3GEYJ122	M.RESISTOR CH1/16W 1.2K	1	
R3570	ERJ3GEYJ562	M.RESISTOR CH1/16W 5.6K	1	
R3571	ERJ3GEYJ222	M.RESISTOR CH1/16W 2.2K	1	
R3572	ERJ3GEYJ154	M.RESISTOR CH1/16W 150K	1	
R3573	ERJ3GEYJ471	M.RESISTOR CH1/16W 470	1	
R3574,75	ERJ3GEYJ102	M.RESISTOR CH1/16W 1K	2	
R3580,81	ERJ3GEYJ473	M.RESISTOR CH1/16W 47K	2	
R3582	ERJ3GEYJ223	M.RESISTOR CH1/16W 22K	1	
VR3501	EVM7JSX30B14	V.RESISTOR 10K	1	
VR3503	EVM7JSX30B53	V.RESISTOR 5K	1	
VR3504	EVM7JSX30B13	V.RESISTOR 1K	1	
VR3505	EVM7JSX30B24	V.RESISTOR 20K	1	

ELECTRICAL ADJUSTMENTS FOR CAMERA SECTION

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ELECTRICAL ADJUSTMENT PROCEDURES

1.ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the CAMERA section.

1) TEST EQUIPMENT

1. Oscilloscope
   Dual Trace, 50MHz, 2mV/DIV
   10:1 Probe
   1:1 Probe
2. Digital Volt Meter of VTVM
3. Frequency Counter
4. Vectorscope
5. Light Meter
6. Tripod
7. Colour Video Monitor
8. Lighting
   140 foot-candles (1400lux) on the chart surface 3200 degrees K.

2) TOOLS

   * Logarithmic Gray Scale Chart
     (Part No.: YWV2310RB99)
   * Colour Chip Chart
     (Part No.: YWV2100RB98)
   * Hunting Chart
     (Part No.: VFK0546)
   * J Chart & Ball Chart
     (Part No.: VFK0580)
   * Colour Bar Chart
     (Part No.: VFK0677)

10. Plastic Tip Driver
11. E.V.R. FIXTURE (Part No.: VFK0644)
    * ROM 32 (Part NO.: VFK0701ROM32)

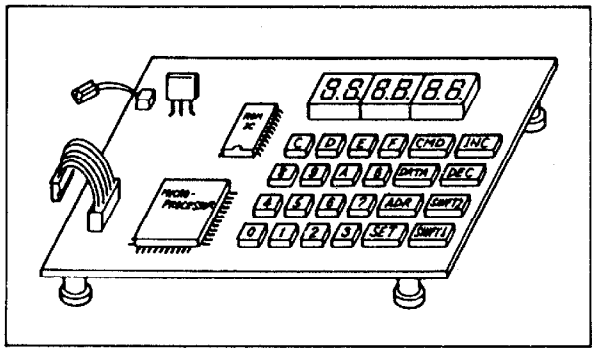


Fig. C1

12. Colour Temperature Conversion Filter
    * C12 Filter (Part No. VFK0374 or VFK0713)
    * C2 Filter (Part No. VFK0375 or VFK0716)
    * Movie Light Box VRD91MLB
      (including VFK0777 Gray Scale Chart)
13. Extension Cable
    * CONNECTION Cable for Measurement (24P)
      (Part No. VFK0734W)
    * EVR CONNECTION Cable (5P)
      (Part No. VFK0766A)
14. Camera Extension Cables

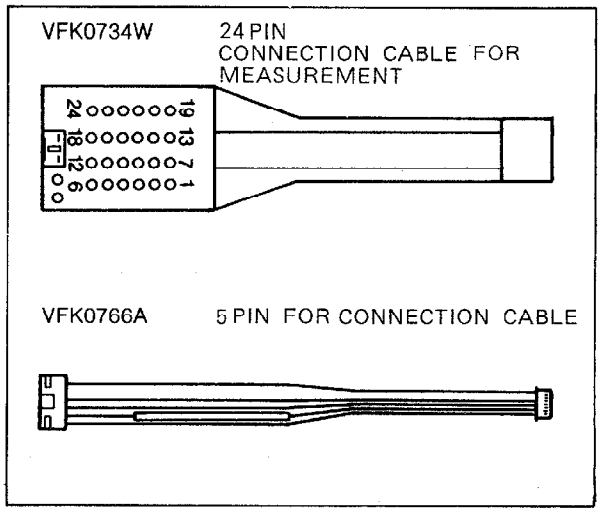


Fig. C2

(Standard Setting for Camera Adjustment)

The camera switches must be set in the following position for camera adjustment unless other wise specified each adjustment procedure.

1) White Balance Switch...White set
   (Refer to How to White Set)
   AF...Auto
   High speed shutter...OFF
   Fade...OFF
2) Iris...Center(ALC condition)
3) Use 3200 degrees kelvin light source for lighting.
4) To trigger the oscilloscope, use Video output.
5) Service work for camera unit must be performed in a dust free location to maintain the lens cleanliness.

(How to set White Balance)

1) Aim the camera at white chart.
2) Push [SHIFT 1 + 8] simultaneously.

(Description of Command)

Selecting the communication for the type of data exchange performed between EVR Fixture and camcorder.

Command	Communication	Contents
02	EVR Fixture → EEPROM	Writing the data to address of EEPROM. (Lower Digit)
12	EVR Fixture → EEPROM	Writing the data to address of EEPROM. (Upper Digit)
04	EEPROM → EVR Fixture	Reading out the data of EEPROM. (Lower Digit)
14	EEPROM → EVR Fixture	Reading out the data of EEPROM. (Upper Digit)
08	EVR Fixture → Micro Computer (RAM)	Data transmission of EVR Fixture to Micro computer (RAM).
18	EVR Fixture → Micro computer (RAM)	Data tranmission of EVR Fixture to Micro computer (RAM).
09	Micro computer (RAM) → EVR Fixture	Reading out the data of Micro computer (RAM).
19	Micro computer (RAM) → EVR Fixture	Reading out the data of Micro computer (RAM).

Fig. C3

(Error Indication)

If an error is occurs while EVR is operating, EVR will display one of the error massages listed in Fig.C4 for 2 seconds and then return to the previous indication.

Error NO.	Contents of Error	Simple checking method
1	Set the command number	
2	Set the wrong Address number	
3	VD signal from camera is not coming.	TP lead wire may be cut
4~6	Detect the error during communication	TP lead wire may be cut
7	Writing error in the EEPROM of camera.	Command or address cure wrong
8	Communication error in the EEPROM of camera	Same as above

Fig. C4

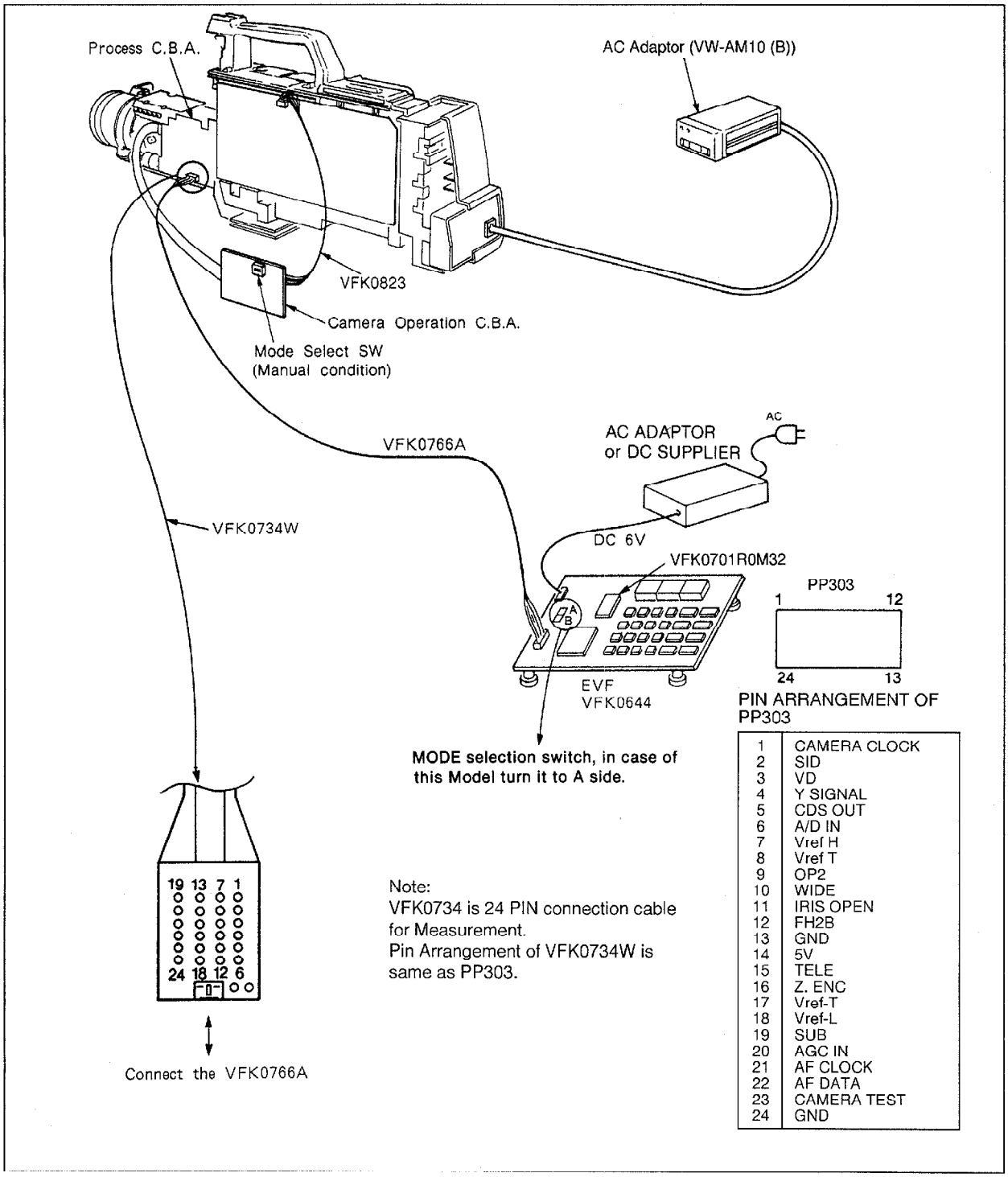
(Macro Operation)
The following operation is provided to transfer the data by one touch.

<table>
<tr><th>NO.</th><th>Buttom to be pushed</th><th>Operation</th></tr>
<tr><td>1</td><td>SHIFT 1+0</td><td>Fully opens the IRIS.</td></tr>
<tr><td>2</td><td>SHIFT 1+1</td><td>Fully close the IRIS.</td></tr>
<tr><td>3</td><td>SHIFT 1+2</td><td>Minimizes AGC Gain.</td></tr>
<tr><td>4</td><td>SHIFT 1+3</td><td>Maximizes AGC Gain.</td></tr>
<tr><td>5</td><td>SHIFT 1+4</td><td>Turns Fade on.</td></tr>
<tr><td>6</td><td>SHIFT 1+5</td><td>Turns Fade off.</td></tr>
<tr><td>7</td><td>SHIFT 1+6</td><td>NOT USED</td></tr>
<tr><td>8</td><td>SHIFT 1+7</td><td>(Mode select sw on the Camera Operation C.B.A., should be "MANUAL" position.)
Switcing the Auto/manual Focus.
* Press the SHIFT 1+7 to select the Auto or Manual Focus.
(The focus mode selected is displayed on Address LED only while the keys are depresses)
<table><tr><th>LED INDICATION</th><th>MODE</th></tr><tr><td>0</td><td>Manual Focus mode.</td></tr><tr><td>1</td><td>Auto Focus mode.</td></tr></table></td></tr>
<tr><td>9</td><td>SHIFT 1+8</td><td>White set
(Mode select sw on the Camera Operation C.B.A., should be "MANUAL" position.)</td></tr>
<tr><td>10</td><td>SHIFT 1+9</td><td>Making Iris manual condition.</td></tr>
<tr><td>11</td><td>SHIFT 1+A</td><td>Iris is return to Auto Mode.</td></tr>
<tr><td>12</td><td>SHIFT 1+B</td><td>AGC Gain is return to Auto Mode.</td></tr>
<tr><td>13</td><td>SHIFT 2+0</td><td>Writes the Average data Fixed data to the EEPROM.</td></tr>
<tr><td>14</td><td>SHIFT 2+1</td><td>Automatically Calculates the Colour Reproduction and White Balance.</td></tr>
<tr><td>16</td><td>SHIFT 2+5</td><td>Zooms to "WIDE" position.</td></tr>
<tr><td>17</td><td>SHIFT 2+6</td><td>Stop the Zoom.</td></tr>
<tr><td>18</td><td>SHIFT 2+7</td><td>Zooms to "TELE" position.</td></tr>
<tr><td>19</td><td>SHIFT 2+8</td><td>Stop the Zoom.</td></tr>
<tr><td>20</td><td>SHIFT 2+9</td><td>Automatic Calculating for Manual Iris setting.</td></tr>
</table>

Fig. C5

PREPARATION

1) Remove both side cases referring to disassembly method.
2) Connect the E.V.R. FIXTURE and measuring equipment as shown in Fig. C6.

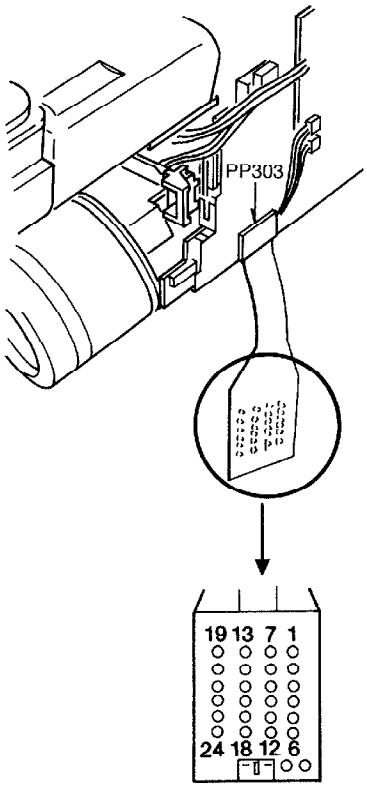


1	CAMERA CLOCK
2	SID
3	VD
4	Y SIGNAL
5	CDS OUT
6	A/D IN
7	Vref H
8	Vref T
9	OP2
10	WIDE
11	IRIS OPEN
12	FH2B
13	GND
14	5V
15	TELE
16	Z. ENC
17	Vref-T
18	Vref-L
19	SUB
20	AGC IN
21	AF CLOCK
22	AF DATA
23	CAMERA TEST
24	GND

Fig. C6-1

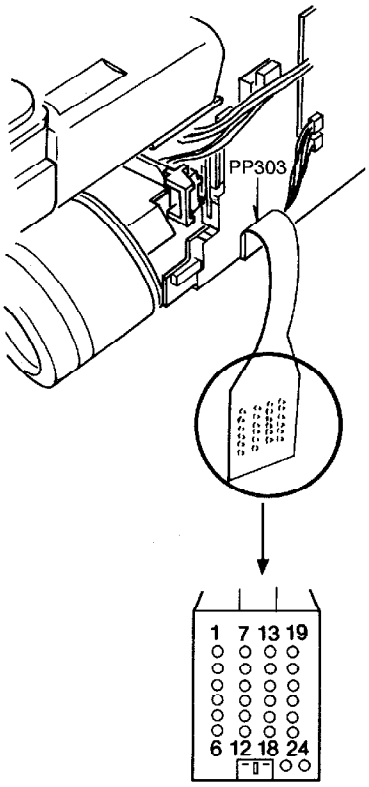
How to connect the EVR Fixture

Wrong



(Front Side of VFK0734W)

Correct



(Rear Side of VFK0734W)

Caution:
If connect the VFK0734W between EVR and Movie camera as above figure, Iris making fully open condition and EVR can't use for Adjutment of camera.

Fig. C6-2

1) Set the mode selector on the E.V.R. Fixture to "B" side. (Refer to Fig.C27)
2) Turn on the power SW of Movie camera.
3) Turn on the power SW of E.V.R. fixture. The LED Display on E.V.R. Fixture will indicate 08,80,00. If it does not indicated, push the Reset button and/or check the cable connections between EVR and CAMERA.
4) Mode Select SW on the camera Operation C.B.A., should be "manual" condition.
If "AUTO" condition, focus is always "AUTO".

HOW TO READ THE ADJUSTMENT PROCEDURES
(FOR USE OF CONVENTIONAL VR)

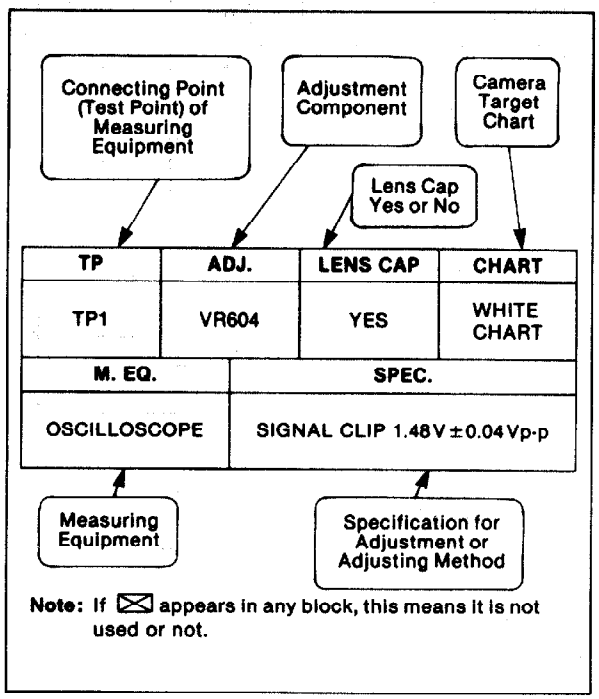


Fig. C7

HOW TO READ THE ADJUSTMENT PROCEDURES
(FOR USE OF E.V.R.)

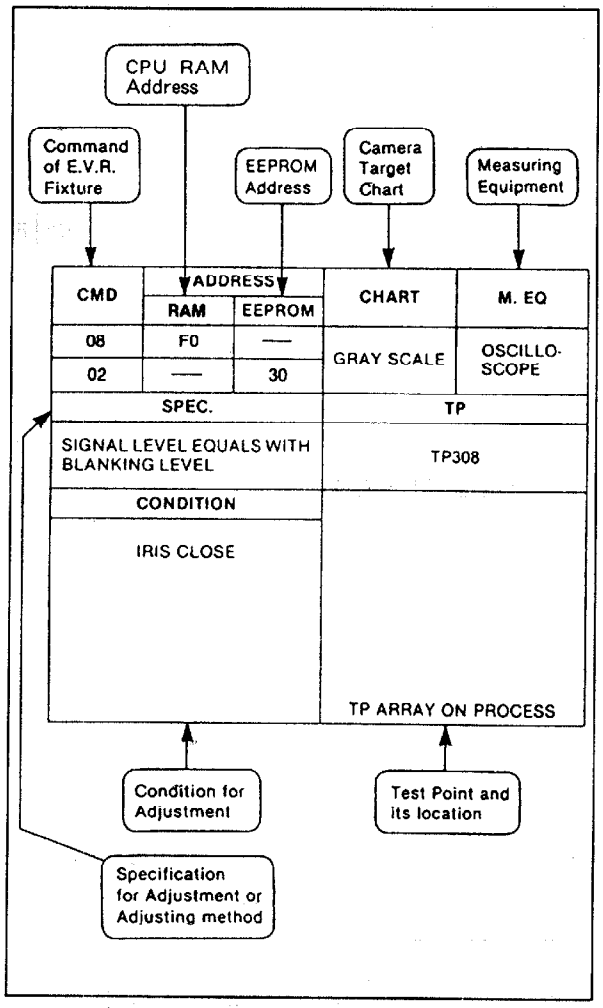


Fig. C8

1. DATA WRITING

When EEPROM is replaced, all item needs re-adjustment.

But if VFK0701ROM32(New ROM) is installed to the EVR Fixture (VFK0644), when the pushing [SHIFT 2] and [0] keys simultaneously, Average and fixed Data are written in to EEPROM Automatically.

		UPPER							
LOWER		0	1	2	3	4	5	6	7
0	H DIGIT	B-Y Gain 6000 31	B-Y MAT 6000 89	B-Y WB 6000 40	B-Y limit 6000 27	B-hili 6000 2A	BACKUP 1 72	vap-cl D0	cnt lapt 25
	L DEGIT	R-Y Gain 6000 4F	R-Y MAT 6000 60	R-Y WB 6000 37	R-Y limit 6000 20	R-hili 6000 43	BACKUP 1 9E	vap-core 25	glap 83
1	H DIGIT	B-Y Gain 5100 31	B-Y MAT 5100 89	B-Y WB 5100 4F	B-Y limit 5100 2A	B-hili 5100 5B	BACKUP 2 80	Hap-cor 82	cnt ck B0
	L DEGIT	R-Y Gain 5100 4F	R-Y MAT 5100 60	R-Y WB 5100 40	R-Y limit 5100 23	R-hili 5100 57	BACKUP 2 54	hi-l, ap 10	cnt ct E0
2	H DIGIT	B-Y Gain 4500 31	B-Y MAT 4500 89	B-Y WB 4500 63	B-Y limit 4500 5B	B-hili 4500 81	BACKUP 3 8B	cnt2-up 06	cnt lapk 25
	L DEGIT	R-Y Gain 4500 4F	R-Y MAT 4500 60	R-Y WB 4500 3A	R-Y limit 4500 31	R-hili 4500 48	BACKUP 3 56	cnt2-dn 80	g lap F8
3	H DIGIT	B-Y Gain 3600 34	B-Y MAT 3600 7E	B-Y WB 3600 70	B-Y limit 3600 63	B-hili 3600 91	BACKUP 4 F0	H+gain 20	NOT USED 00
	L DEGIT	R-Y Gain 3600 4E	R-Y MAT 3600 60	R-Y WB 3600 53	R-Y limit 3600 48	R-hili 3600 61	BACKUP 4 FF	Vap-gain 12	NOT USED 00
4	H DIGIT	B-Y Gain 3300 48	B-Y MAT 3300 7E	B-Y WB 3300 7B	C-FLAG TH 67	CSPDm 08	agclim 2 A0	c-g-ap 20	NOT USED 00
	L DEGIT	R-Y Gain 3300 36	R-Y MAT 3300 60	R-Y WB 3300 5E	CHSPD 04	CSPDs 19	EIS ON/OFF 83	c-g-sw 55	NOT USED 00
5	H DIGIT	B-Y Gain 3100 48	B-Y MAT 3100 7E	B-Y WB 3100 82	B-limit 3100 69	B-hili 3100 B7	ped-h 0A	H-st/p 38	NOT USED 00
	L DEGIT	R-Y Gain 3100 36	R-Y MAT 3100 60	R-Y WB 3100 68	R-limit 3100 61	R-hili 3100 B6	ped-1 H-ed/p 0A	H-ed 40	NOT USED 00
6	H DIGIT	B-Y Gain 2800 40	B-Y MAT 2800 7E	B-Y WB 2800 8A	B-limit 2800 69	B-hili 2800 B7	ped-st 50	V-st/b 50	NOT USED 00
	L DEGIT	R-Y Gain 2800 40	R-Y MAT 2800 60	R-Y WB 2800 75	R-limit 2800 B6	R-hili 2800 B6	ped-end 90	V-ed/p 18	NOT USED 00
/	H DIGIT	SHT FF	awtwait 14	Bwb Limit 40	B-limit SKY 82	B-hili SKY 27	Ped-lvl 00	H-st/b 4C	NOT USED 00
	L DEGIT	awtflag 2 20	awt stwait 31	Rwb Limit 37	R-limit SKY 1D	R-hili SKY 43	flag 3 FD	sw 3E	NOT USED 00
8	H DIGIT	Hap gain 20	Hap-core 82	Bwb Hlimit 4F	B-limit TREE 5B	B-hili TREE 91	flag / FF	Y-base AC	NOT USED 00
	L DEGIT	Vap gain 10	00	Rwb Hlimit 40	R-limit TREE 1D	R-hili TREE 31	flag 8 03	Vap-core 05	NOT USED 00
9	H DIGIT	Houwa-U D0	HAP-NO 3C	B-Y WB 4900 4F	BWBZ B 00	BWBZ C 00	Tree BK 03	cntlap 28	NOT USED 00
	L DEGIT	Houwa-L B0	PEAKLPF 11	R-Y WB 4900 40	RWBZ B 00	RWBZ C 00	P-WAITE A0	g-lap D3	NOT USED 00
A	H DIGIT	tstflg F4	cls 4 31	DSP Ver 20	U puls 18	Baxish Th 5B	st-alcp 05	D-Aagc 36	NOT USED 00
	L DEGIT	haloth 17	cls 8 71	MODEL-NBR DB	d puls 98	Baxish Th 48	st-alcn 05	cntc E0	NOT USED 00
B	H DIGIT	B in 05	VSTART 1D	TH 1 55	TH 3 6F	PALBR 00	open g 1 40	Ychk h A0	NOT USED 00
	L DEGIT	R in 05	ad set 93	TH 2 02	TH 4 10	LOOPTH 02	open g 2 7A	Ychk 1 28	NOT USED 00
C	H DIGIT	Outb 1 9F	ina 1 F3	OPS 4 31	KOTEI A 2D	00	AEDATA 1 0A	Yclpv 1 80	NOT USED 00
	L DEGIT	Outb 2 7B	ina 2 E6	ST 74	KOTEI B 2D	00	OPEN G 3 8B	darklv 1 00	NOT USED 00
D	H DIGIT	Outb 3 5C	ina 3 CD	Seki D0	KOTEI C 18	00	AEDATA 2 C1	BACK UP 01	NOT USED 00
	L DEGIT	Outb 4 4F	ina 4 B3	AGC lim B0	KOTEI D 18	00	CLOSE G 3 9C	BACK UP FF	NOT USED 00
E	H DIGIT	Outb 0 0B	close 00	SW-set 83	Keisha 03	ag cnt 1 3F	CORE 03	loop gn 19	NOT USED 00
	L DEGIT	T-gain 24	open 00	MIX 03	AG-CENTER 9F	f cnd 48	CLOSE G2 AE	loop gt 00	NOT USED 00
F	H DIGIT	A/D IN 97	AF-VP 93	OR bias A0	R-YKB 3E	LOW CLIP 92	OPS 8 71	clpmax E0	NOT USED 00
	L DEGIT	AF-Vn 7C	AF-AMP AA	PWM-B CE	Y-GAIN 19	B-YKB 33	CLOSE G3 BF	PAL flkg 41	NOT USED 00

Fig. C9 Address map of all Average Data

2. VTR CARRIER BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	R: B8 B: BB	—		VECTOR-SCOPE
12, 02	—	R-Y: 3F (H) B-Y: 4F (L)		
SPEC.			TP	
CENTRE OF VECTORSCOPE			VIDEO OUT	

Purpose:
Set chroma signal black and white level.

Symptom of Misadjustment:
With a large shift, colour is added to Black and white areas in the picture.

Note:
Refer to preparation for connection of EVR.

〈Preparation〉
1. Connect the vectorscope to Video out.
2. Aim the camera at white chart.
3. Push [SHIFT 1+8] keys simultaneously for white set.
4. Place the unit to "IRIS CLOSE" by pushing [SHIFT 1+1] keys simultaneously.

〈Adjustment for R-Y〉
Push following keys in order.
5. * [CMD], [1], [8].
   * [ADR], [B], [8].
6. Push [INC] or [DEC] keys until the vectors are in or close as possible to the centre, See Fig. C10.

〈Data writing for R-Y〉
Push following keys in order.
7. * [CMD], [1], [2].
   * [ADR], [3], [F]. (Does not change the data).
   * [SET].

〈Adjustment for B-Y〉
Push following keys in order.
8. * [CMD], [1], [8].
   * [ADR], [B], [B].
9. * Push [INC] or [DEC] keys until the vectors are in or as close as possible to the centre, See Fig. C10.

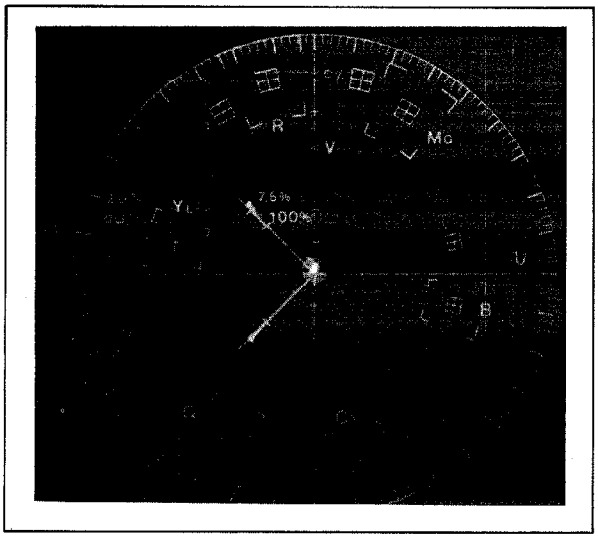


Fig. C10

〈Data writing for B-Y〉
Push following keys in order.
10. * [CMD], [0], [2].
    * [ADR], [4], [F]. (Does not change the data).
    * [SET].
    * [SHIFT 1+A] (Iris is return to Auto Mode).

3. HALL AMP ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B5	—		D.V.M
	VR701	—		
02	—	IF		
SPEC.			TP	
VOLTAGE PP303-9 (VFK0734W-PIN 9)= VOLTAGE PP303-18 (VFK0734W-PIN 18) VOLTAGE PP303-9 (VFK0734W-PIN 9)= VOLTAGE PP303-7 (VFK0734W-PIN 7)			PP303-9 (PIN Number 9 of VFK0734W) VFK0734W-REAR 1 7 13 19 6 12 18 24	

Purpose:
Hall Amp Adjustment.

Symptom of Misadjustment:
Hunting occurs or focus stops.

〈Preparation〉
1. Connect the jumper wire between PP303-11 (VFK0734W-PIN 11) and GND for Making Iris close. (Do not use EVR for IRIS close)

〈Adjustment 1〉
Push the following keys in order.
2. * [CMD], [1], [8].
   * [ADR], [B] [5].
3. * Push [INC] or [DEC] keys until the voltage level at PP303-9 (VFK0734W-9) is Vref 1+−10mV. (Vref 1= PP303-18 (VFK0734W-18)).

〈Data Writing for Adjustment 1〉
Push the following keys in order.
4. * [CMD], [0], [2].
   * [ADR], [1], [F].
   * [SET].
   * Remove the jumper wire.

〈Adjustment 2〉
5. Connect the jumper wire between PP303-11 (VFK0734W-PIN 11) and PP303-14 (VFK0734W-PIN 14) for fully open the Iris.
6. Adjust the VR701 so that Voltage at PP303-9 (VFK0734W-9) is Vref 3+−30mV. (Vref 3=PP303-7 (VFK0734W-7)).
7. Remove the jumper wire.

4. PLL FREQUENCY ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
CL203	C223		
M. EQ.		SPEC.	
FREQUENCY COUNTER		12.713285MHz±15Hz	

Purpose:
CCD Drive pulse adjustment.

Symptom of Misadjustment:
Picture sync misoperation.

5. PWM ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B7	—		D.V.M
02	—	2F (L)		
SPEC.			TP	
			PP303-9 (VFK0734W-PIN 9) VFK0734W-REAR	

〈Preparation〉
1. Set the Iris to "open". (Push [SHIFT 1+0]).
2. Connect the D.V.M. to PP303-9 (VFK0734W-PIN 9).

〈Pre-Adjustment〉
Push the following keys in order.
3. * [CMD], [1], [8].
   * [ADR], [B], [7].
4. Push [INC] or [DEC] keys until the voltage level at PP303-9 (VFK0734W-9) is Vref 1+−50mV. (Vref 1= "PP303-7 (VFK0734W-7)" −500mV).
5. * [SHIFT 1+1] (fully close the Iris).
6. * [SHIFT 1+0] (fully open the Iris).

〈Fine-Adjustment〉
Push the following keys in order.
7. * [CMD], [1], [8].
   * [ADR], [B], [7].
8. Push [INC] or [DEC] keys until the voltage level at PP303-9 (VFK0734W-9) is Vref 2+−20mV. (Vref 2= "PP303-7 (VFK0734W-7)" −140mV).

〈Data Writing〉
Push the following keys in order.
9. * [CMD], [0], [2].
   * [ADR], [2], [F]. (Does not change the data).
   * [SET].
   * [SHIFT 1+A] (Iris is return to Auto Mode).

6. ZOOM ENCODER AND FOCUS ENCODER ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	T: B4 W: B3	—	object: 1.5m (Hunting chart)	DIGITAL VOLTMETER
12	—	T: 1F (H)		
02	—	W: OF (L)		
SPEC.			TP	
To be calculated			PP303-8 (VFK0734W-8) PP303-17 (VFK0734W-17) VFK0734W-REAR	
CONDITION				
• Focus Manual (SHIFT 1+7)				

Note:
1) Unless you replaced Zoom Encoder, 3rd lens (1) unit or 4th moving frame (1) unit, do not perform this adjustment. (Because this adjustment is critical).
2) Regarding the connection of EVR, refer to preparation. (Fig. C6)

〈Initial Measurement and Preparation〉
1. Check the voltage at PP303-8 (VFK0734W-PIN 8) and PP303-17 (VFK0734W-PIN 17) before changing the defective lens unit.
   For example:
   PP303-8 (VFK0734W-PIN 8): 3.652V
   PP303-17 (VFK0734W-PIN 17): 1.456V
2. Make note the potential difference between PP303-8 (VFK0734W-PIN 8) and PP303-17 (VFK0734W-PIN 17).
   For example:
   3.652−1.456=2.196V
3. Turn off the power SW.
4. Replace lens unit.
5. Loosen 2 screws of Focus encoder C.B.A. and move C.B.A. to center position as shown in Fig. C11-1.

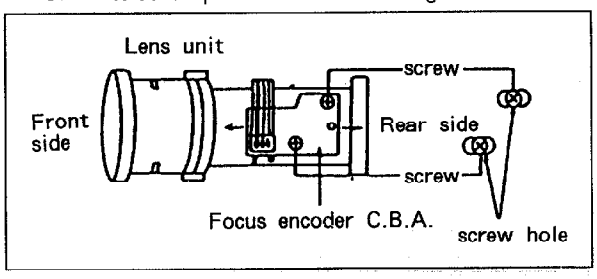


Fig. C11-1

6. Turn on the power SW.
7. Set the Focus system to Manual Focus.
   (Pushing [SHIFT 1+7] keys simultaneously switches the Focus system between Manual and Auto Focus, "O" displayed at address LED while [SHIFT 1+7] keys depressed indicates Manual Focus, "1" indicates Auto Focus.
8. Zoom the lens to full tele position.
   Push [SHIFT 2+7] keys simultaneously.
9. Aim the unit at Hunting chart from a distance 1.5 meter.
10. Set the focus to full (−) position.
    * Turn the focus ring counterclockwise until the picture focus does not change.

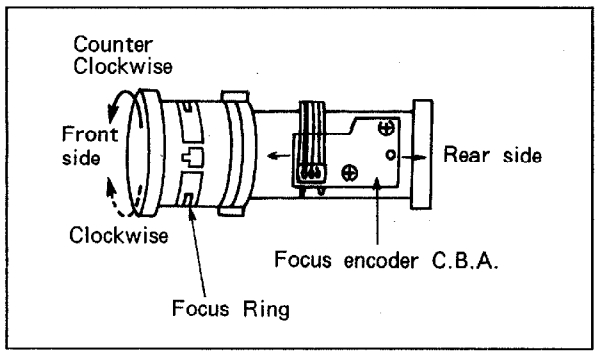


Fig. C11-2

〈Adjustment for Tele Side〉
Push the following keys in order.

11. * [CMD], [1], [8].
    * [ADR], [B], [4].
12. * Push [INC] or [DEC] keys until the lens focus is in correct position.

[Note 1]
The focus does not change while focus voltage is being adjusted on the EVR.
To see the focus adjustment the lens unit must be zoomed from TELE to WIDE and back to TELE to activate the focus.

[Note 2]
Using the zoom controls on the EVR disables the Zoom controls of TELE/WIDE button on the camera.
Therefore, use EVR ([SHIFT 2+7] or [SHIFT 2+5]) to move zoom for the TELE or WIDE position.

13. When lens focus comes to the correct position cat fully TELE Side, Push the following keys in order for store the data to EEPROM directly.
    * [CMD], [1], [2].
    * [ADR], [1], [F].
    * [SET].
    If the lens assembly cannot be focused, the Focus Encoder C.B.A. must be repositioned.
    Turn the focus ring clockwise.
    * If the focus improves more, the Focus Encoder C.B.A. to the rear.
    * If the focus deteriorates more, the Focus Encoder C.B.A. to the front.
    Return to Step (6) to reposition the Focus Encoder C.B.A.

〈Adjustment for Wide Side〉

14. Check the Voltage at PP303-8 (VFK0734W-PIN 8).
15. Subtract the voltage that was noted at step (2) from the voltage at step (14).
    For example:
    If the voltage at PP303-8 (VFK0734W-PIN 8) is 3.662V.
    3.662−2.196=1.466
16. Set the voltage at PP303-17 (VFK0734W-PIN 17) to 1.466V with EVR as follows.
    Push the following keys in order.
    * [CMD], [1], [8].
    * [ADR], [B], [3].
    * Push [INC] or [DEC] until the voltage at PP303-17 (VFK0734W-PIN 17) is 1.466V.
17. Push the following keys in order for store the data to EEPROM Directly.
    * [CMD], [0], [2]. (Does not change the data).
    * [ADR], [0], [F].
    * [SET].

<Confirm the focus when zooming to wide side>

1. Zoom in to the TELE position [SHIFT 2+7].
2. Manually adjust focus ring for best focus.
3. Zoom out to the wide position [Shift 2+5].
4. Rotate focus ring manually and determine it focus improves by turning ring clockwise or counterclockwise.
5. If focus improves by turning focus ring clockwise, loosen the 2 screws holding Focus Encoder C.B.A. and move the board slightly to the rear.
6. If focus improves by turning focus ring counterclockwise, loosen the 2 screws holding the Focus Encoder C.B.A. and move the board slightly to the front.
7. Turn Power Switch OFF and then ON to reset the Auto-Focus microprocessor.
8. Repeat the procedure from Step 1 to Step 7 as many times as necessary until focus is maintained while zooming from TELE to WIDE position.
9. Carefully tighten the 2 screws on the FOCUS ENCODER C.B.A.

Note: The 9 steps indicated above may be used independently as BACK FOCUS FINE ADJUSTMENT without the need of on E.V.R. Fixture tool. For Zooming functions reconnect the 5-pin(VFK0766A).

1) Focus is not good at full wide side.

Adjust the data of ADR "B3" at the full Wide Side keeping the voltage at PP303-(18) within ± 0.05V of the voltage in Step(16).

Check back focus While Zooming.
* If back focus is good, go to Step(19).
* If back focus is not good, stop the zoom at the position of bad focus.
  Turn the focus ring clockwise and/or counterclockwise.
  If focus improves when the focus ring is turned counterclockwise reposition the Focus Encoder C.B.A. to the front.
  If focus improves when the focus ring is turned clockwise, reposition the Focus Encoder C.B.A. to the rear.
  Return to Step(5) to reposition the Focus Encoder C.B.A.

2) Focus is not good between TELE and WIDE.

Stop the zoom at the position of bad focus.
Turn the focus ring clockwise and/or counterclockwise.
* If focus improves when the focus ring is turned counterclockwise, reposition the Focus Encoder C.B.A. to the front.
* If focus improves when the focus ring is turned clockwise, reposition the Focus Encoder C.B.A. to the rear.
  Return to Step(5) to reposition the Focus Encoder C.B.A.

7. V-SUB ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B6	—	HALOGEN LAMP	MONITOR TV
12	—	2F		
SPEC.			TP	
NO BLOOMING				

1. Zoom all the way in (full tele position or full wide position) and aim the camera at the Halogen Lamp as shown in Fig. C12.
2. Set the High Speed Shutter SW to "OFF" position.
3. Diffuse the incoming light using frosted glass or acryl plate. Place the cardboard which has been cut to "U" shape as shown in Fig. C12. between the diffusion plate and the camera.
4. Set the Iris to fully open [SHIFT 1+0].

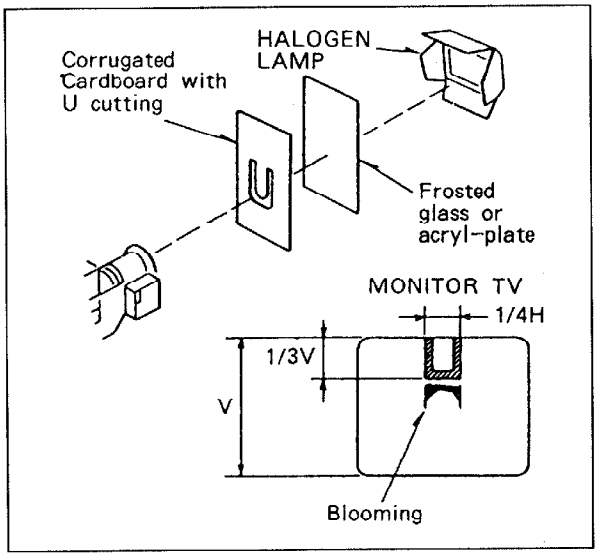


Fig. C12

〈Adjustment〉
Push the following keys in order.
5. * [CMD], [1], [8].
   * [ADR], [B], [6].
6. * Push [INC] or [DEC] keys until the blooming disappears (If blooming does not disappear completely, adjust until the blooming mimize).

〈Data Writing〉
Push the following keys in order.
7. * [CMD], [1], [2].
   * [ADR], [2], [F].
   * [SET].
   * [SHIFT 1+A]. (Iris is return to Auto Mode.)
8. Confirm that the monitored picture does not contain Blooming in both High Speed Shutter "ON" and "OFF" modes even if the camera moves as shown in Fig. C13.

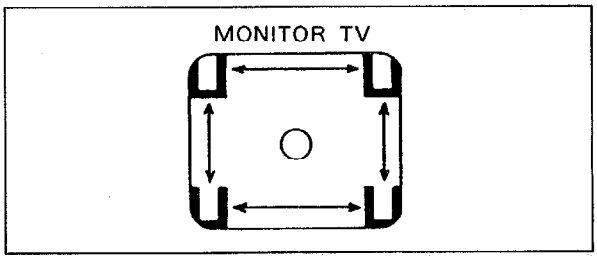


Fig. C13

8. PEDESTAL LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	BA	—		OSCILLO-SCOPE
12	—	4F		
SPEC.			TP	
B : A = 12 : 1			PP303-4 (VFK0734W-4) VFK0734W-REAR	

〈Preparation〉
1. Cover the lens.
   Push [SHIFT 1+3] keys (Maximizes AGC Gain).
   Push [SHIFT 1+9] keys (Making Iris manual condition).
2. Connect the oscilloscope to PP303-4 (VFK0734W-PIN 4).

〈Adjustment〉
Push the following keys in order.
3. * [CMD], [1], [8].
   * [ADR], [B], [A].
4. * Push [INC] or [DEC] keys until ratio of B and A is 12 : 1.

〈Data writing〉
Push the following keys in order.
5. * [CMD], [1], [2].
   * [ADR], [4], [F].
   * [SET].
6. * [SHIFT 1+A]. (Iris is return to Auto Mode.)

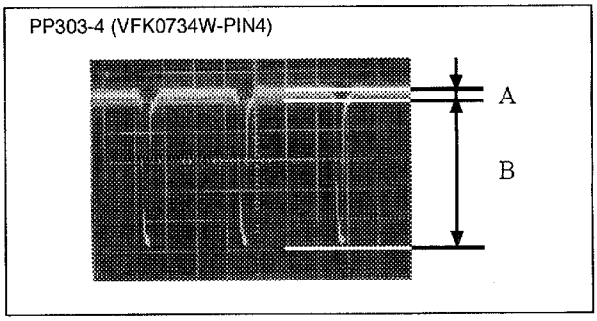
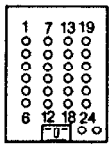


Fig. C14

9. AGC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	BC	—	GRAY SCALE CHART	OSCILLO-SCOPE
12	—	6A		
SPEC.			TP	
300mV±20mV			PP303-5 (VFK0734W-PIN 5) PP303-20 (VFK0734W-PIN 20) VFK0734W-REAR 	

Purpose:
Set standard signal gain.

Symptom of Misadjustment:
The picture is sometimes too dark or too bright.

〈Preset for AGC Adjustment〉
1. Making Iris manual condition [SHIFT 1+9].
2. Aim the camera at Gray Scale Chart.
3. Connect the Oscilloscope to PP303-5. (VFK0734W-PIN 5)

〈Preset 1-Rough〉
Push the following keys in order.
4. * [CMD], [1], [8].
   * [ADR], [D], [F].
5. * Push [INC] or [DEC] keys until signal level at PP303-5 (VFK0734W-PIN 5) is 300mV+−10mV.

〈Preset 2-Fine〉
Push the following keys in order.
6. * [CMD], [1], [8].
   * [ADR], [D], [E].
7. * Push [INC] or [DEC] keys until signal level at PP303-5 (VFK0734W-PIN 5) is 300mV+−10mV.

〈AGC Adjustment〉
Push the following keys in order.
8. * [CMD], [1], [8].
   * [ADR], [B], [C].
9. * Push [INC] or [DEC] keys until the signal level at PP303-20 (VFK0734W-PIN 20) is 300mV+−20mV.

PP303-5
(VFK0734W-PIN5)

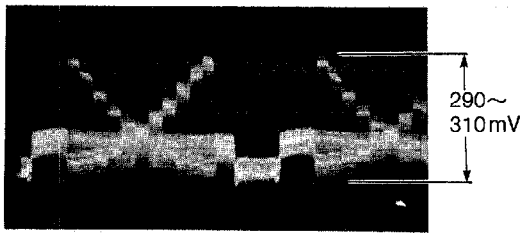


Fig. C15-1

PP303-20 (VFK0734W-PIN20)

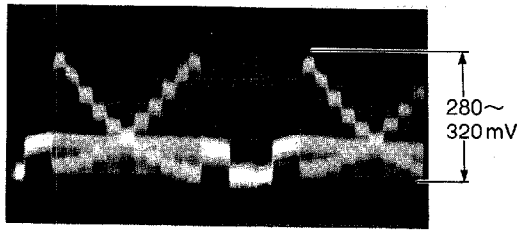
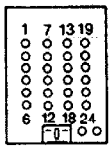


Fig. C15-2

〈Data Writing〉
Push the following keys in order.
10. * [CMD], [1], [2]. (Does not change the Data).
    * [ADR], [6], [A].
    * [SET].
11. * Push [SHIFT 1+A] keys (Iris return to Auto mode).

10. A/D INPUT LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B1	—	GRAY SCALE CHART	OSCILLO-SCOPE
12	—	0F		
SPEC.			TP	
1.2V±40mV			PP303-5 (VFK0734W-PIN 5) PP303-6 (VFK0734W-PIN 6) 	

Purpose:
A/D converter input Level adjustment.

Symptom of Misadjustment:
The picture is too dark or too bright.

〈Preset for AGC Adjustment〉
1. Making Iris manual condition [SHIFT 1+9].
2. Aim the camera at Gray Scale Chart.
3. Connect the Oscilloscope to PP303-5. (VFK0734W-PIN 5)

〈Preset 1-Rough〉
Push the following keys in order.
4. * [CMD], [1], [8].
   * [ADR], [D], [F].
5. * Push [INC] or [DEC] keys until signal level at PP303-5 (VFK0734W-PIN 5) is 300mV+−10mV.

〈Preset 2-Fine〉
Push the following keys in order.
6. * [CMD], [1], [8].
   * [ADR], [D], [E].
7. * Push [INC] or [DEC] keys until signal level at PP303-5 (VFK0734W-PIN 5) is 300mV+−10mV.

〈A/D Input level Adjustment〉
8. * [CMD], [1], [8].
   * [ADR], [B], [1].
9. * Push [INC] or [DEC] keys until the signal level at PP303-6 (VFK0734W-PIN 6) is 1.2V+−40mV.

〈Data Writing〉
Push the following keys in order.
10. * [CMD], [1], [2]. (Does not change the Data)
    * [ADR], [0], [F].
    * [SET].
    Push [SHIFT 1+A] keys. (Iris return to Auto mode)

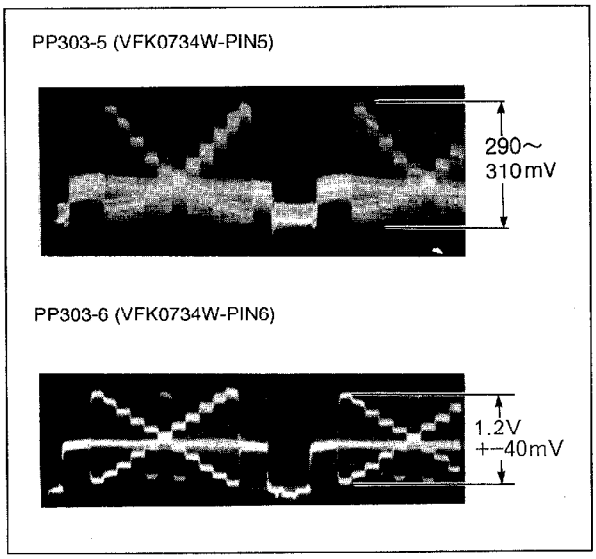
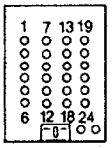


Fig. C16

11. ALC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	D4	—	GRAY SCALE CHART	OSCILLO-SCOPE
02	—	2C		
SPEC.			TP	
1.20V±40mV			PP303-6 (VFK0734W-PIN 6) 	

Note:
Perform this adjustment after finishing the AGC and A/D INPUT LEVEL ADJUSTMENT.

Purpose:
ALC level adjustment.

Symptom of Misadjustment:
The picture is too white or too dark.

〈Preparation〉
1. Set the IRIS to Auto [SHIFT 1+A].
2. Aim the camera at Gray Scale Chart.
3. Connect the oscilloscope to PP303-6 (VFK0734W-PIN 6).

〈Adjustment〉
Push the following keys in order.
4. * [CMD], [1], [8].
   * [ADR], [D], [4].
5. * Push [INC] or [DEC] keys until the signal level at PP303-6 (VFK0734W-PIN 6) is 1.20V+−40mV.

〈Data Writing〉
Push the following keys in order.
6. * [CMD], [0], [2]. (Does not change the Data)
   * [ADR], [2], [C].
   * [SET].

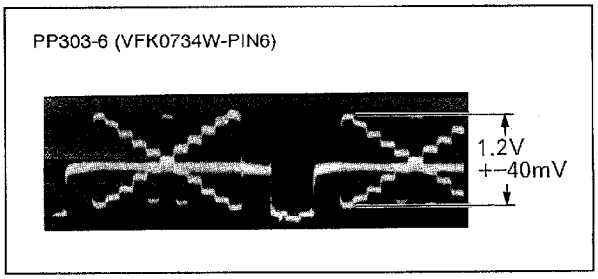


Fig. C17

12. MANUAL IRIS ADJUSTMENT

NO.	ITEM	EEPROM ADDRESS	FORMULA	CMD	RESULT OF CALCULATION
1	OPEN1	4C (High digit)	ADR (2C)+24	READ: 04 WRITE: 12	
2	OPEN2	4C (Low digit)	ADR (4C)+24	READ: 14 WRITE: 02	
3	OPEN3	5C (High digit)	ADR (4C)+24	READ: 04 WRITE: 12	
4	CLOSE1	4D (High digit)	ADR (2C)−16	READ: 04 WRITE: 12	
5	CLOSE2	4D (Low digit)	ADR (4D)−16	READ: 14 WRITE: 02	
6	CLOSE3	5D (High digit)	ADR (4D)−16	READ: 04 WRITE: 12	

Note 1:
ADR(2C) = ALC Data

Note 2:
If the ALC Adjustment is incorrect the Manual Iris SET UP will also be incorrect.
Be sure to carry out the ALC Adjustment procedure correctly before doing the Manual Iris Adjustment.

<Calculation for Manual IRIS>
Push [SHIFT 2 + 9] keys simultaneously.
(All formulas for Manual Iris are performed and results are stored into EEPROM Automatically

The following calculation are for reference only.

* Example
Item 1 : OPEN 1
Formula : ADR(2C)+24

Read out the data From Address(2C) of EEPROM as follows.

* Select read command(04) => Push [CMD],[0],[4].
* Select Address(2C) => Push [ADR],[2],[C].
* Push (SET) to Read the data => Push [SET].

When the (SET) key is pushed, the data LED will indicate the data of Address(2C).
Convert this data to decimal.
If data LED indicate(6D).
HEX(6D) = 109(Decimal Value)

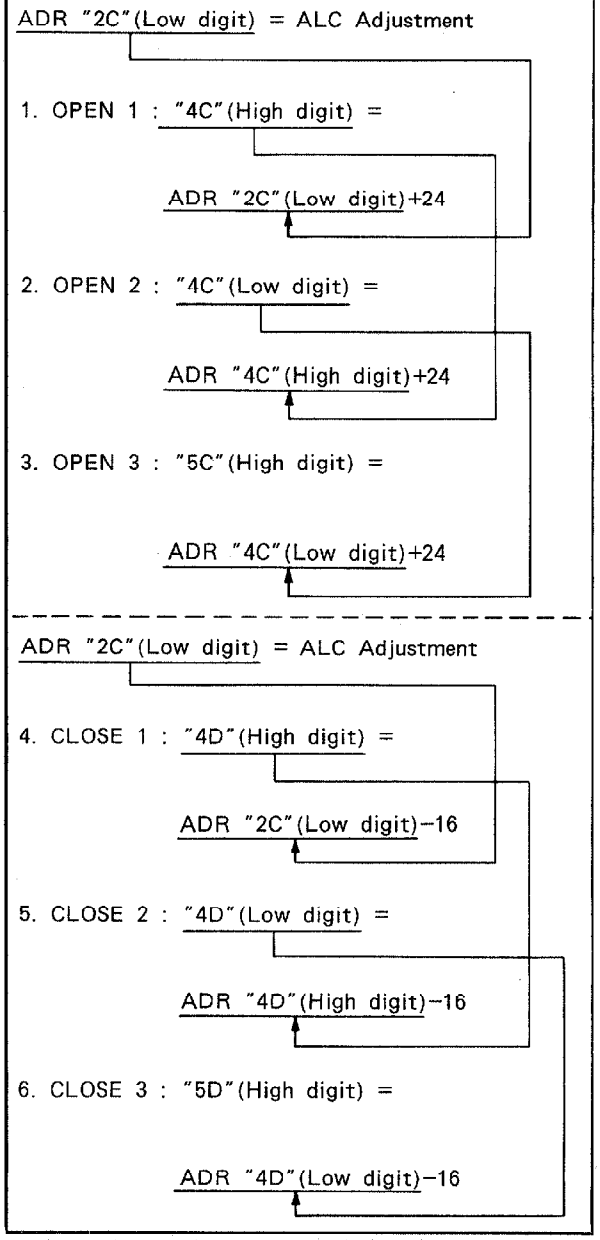
Now using the formula (2C)+24 Calculate the Reset.
(Substitute the Decimal Value for the HEX data in (2C)109+24=133.

Convert the Result to a HEX Value using the table (Fig.C18)
133(decimal)=85(in HEX CODE)

Store the above HEX Value in the EEPROM.
Address(4C) High digit as follows.

* Select command(12) => Push [CMD],[1],[2].
* Select Address(4C) => Push [ADR],[4],[C].
* Set the data(85) => Push [DATA],[8],[5].
* Push (SET) to write the data => Push [SET].

Note 4:
Priority of Formula.


ADR "2C"(Low digit) = ALC Adjustment
1. OPEN 1 : "4C"(High digit) =
ADR "2C"(Low digit)+24
2. OPEN 2 : "4C"(Low digit) =
ADR "4C"(High digit)+24
3. OPEN 3 : "5C"(High digit) =
ADR "4C"(Low digit)+24
ADR "2C"(Low digit) = ALC Adjustment
4. CLOSE 1 : "4D"(High digit) =
ADR "2C"(Low digit)−16
5. CLOSE 2 : "4D"(Low digit) =
ADR "4D"(High digit)−16
6. CLOSE 3 : "5D"(High digit) =
ADR "4D"(Low digit)−16

Hexadecimal lower digit / Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A	b	C	d ②	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
① 6	96	97	98	99	100	101	102	103	104	105	106	107	108	(109)	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
b	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
d	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

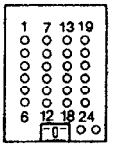
For example: If indication of EVR is "6D" (as upper digit is "6" and lower digit is "D"), a decimal value of "109" is obtained from the intersection of ① and ② in the above table.

Fig. C18 Hexadecimal–Decimal Conversion Table

(Hexadecimal–Decimal Conversion Table)

For some of adjustment items, calculation of hexadecimal data (indicated on LED of EVR Fixture) is needed to obtain the adjustment data.
In these cases, convert the hexadecimal value to decimal value before calculation and after calculation is finished reconvert the result to hexadecimal to obtain the adjustment data. Write the new hexadecimal adjustment data into EEPROM.
A hexadecimal–decimal conversion table is shown in Fig.C18.

13. Y CLIP LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B9	—	WHITE CHART	OSCILLO-SCOPE
02	—	3F		
SPEC.			TP	
V/S=7.7:3			PP303-4 (VFK0734W-PIN 4) VFK0734W-REAR 	

<Preparation>
1. Set the IRIS to "OPEN". [SHIFT1 + 0].
2. Aim the camera at white chart.
3. Connect the Oscilloscope to PP303-4. (VFK0734W-PIN4)

<Adjustment>
Push the following keys in order.
4. * [CMD], [1], [8].
   * [ADR], [B], [9].
5. * Push [INC] or [DEC] keys until raito of V and S is 7.7 : 3.

<Data Writing>
Push the following keys in order.
6. * [CMD], [0], [2]. (Does not change the data)
   * [ADR], [3], [F].
   * [SET].
7. * [SHIFT 1 + A] (IRIS return to Auto Mode)

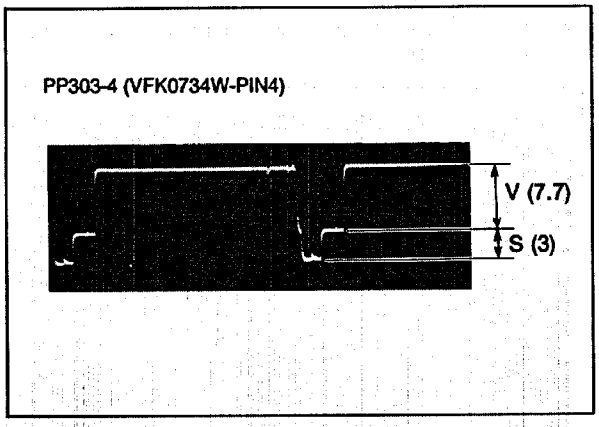


Fig. C19

14. INDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	RAM	EEPROM		
09	BB (R-Y) AB (B-Y)	—	WHITE CHART	VECTOR-SCOPE OR OSCILLO-SCOPE
02	—	25 (R-Y)		
12	—	25 (B-Y)		
SPEC.			TP	
VECTOR COMES CENTRE OR WAVEFORM IS MINIMIZED			VIDEO OUT	
CONDITION				
IRIS: ALC				

<Preparation>
1. Connect the Video out to Vectorscope.
2. Aim the camera at white chart.
   And Push [SHIFT 1 + 8] for white set.
   (Please confirm, vector came to center)

<Read Out the data for R-Y>
Push the following keys in order.
3. * [CMD], [0], [9].
   * [ADR], [B], [B].
   * [SET].
   (When the pushed [SET] key, Data LED of EVR indicate the data of white balance for R-Y)

<Data Writing for R-Y>
Push the following keys in order.
4. * [CMD], [0], [2]. (Do not change the data)
   * [ADR], [2], [5].
   * [SET].

<Read Out the data for B-Y>

Push the following keys in order.
5. * [CMD], [0], [9].
   * [ADR], [A], [B].
   * [SET].

   (When the pushed [SET] key, Data LED of EVR indicate the data of white balance for B-Y)

<Data writing for B-Y>
Push the following keys in order.
6. * [CMD], [1], [2]. (Do not change the data)
   * [ADR], [2], [5].
   * [SET].

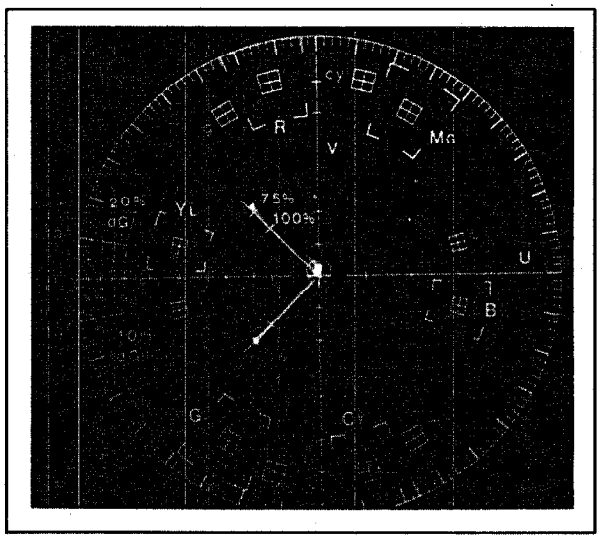


Fig. C20

15. COLOUR PHASE AND GAIN ADJUSTMENT (INDOOR)

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
08	95 (R-Y G) 97 (R-Y P) 94 (B-Y G) 96 (B-Y P)	—	COLOUR BAR CHART	VECTOR SCOPE
02	—	05 (R-Y G) 15 (R-Y P)		
12	—	05 (B-Y G) 15 (B-Y P)		
SPEC.			TP	
RED: 104+−3 degree/PHASE 190%+−10%/GAIN (RED/BURST) 168+−3 degree/PHASE 140%+−10%/GAIN (Yellow/BURST)			VIDEO OUT	

Note:
Be sure to carry out the Indoor White Balance Adjustment before doing this Adjustment.

1. Aim the camera at Colour Bar Chart.
2. Connect the Video out to vectorscope.

<R-Y GAIN>
(Step3 to 5 are R-Y Gain Adjustment)

Push the following keys in order.
3. * [CMD], [0], [8].
   * [ADR], [9], [5].
4. * Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for R-Y Gain>
Push the following keys in order.
5. * [CMD], [0], [2]. (Does not change the data)
   * [ADR], [0], [5].
   * [SET].

<R-Y PHASE>
(Step6 to 8 are R-Y Phase Adjustment)
Push the following keys in order.

6. * [CMD], [0], [8].
   * [ADR], [9], [7].
7. * Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for R-Y Phase>

Push the following keys in order.
8. * [CMD], [0], [2]. (Does not change the data)
   * [ADR], [1], [5].
   * [SET].

<B-Y Gain>
(Step9 to 11 are B-Y Gain Adjustment)
Push the following keys in order.

9. * [CMD], [0], [8].
   * [ADR], [9], [4].
10. * Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for B-Y GAIN>
Push the following keys in order.

11. * [CMD], [1], [2].
    * [ADR], [0], [5].
    * [SET].

<B-Y PHASE>
(Step12 to 14 are B-Y PHASE Adjustment)
Push the following keys in order.
12. * [CMD], [0], [8].
    * [ADR], [9], [6].
13. * Push [INC] or [DEC] keys until phase of red and Yellow Vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for B-Y PHASE>
Push the following keys in order.
14. * [CMD], [1], [2].
    * [ADR], [1], [5].
    * [SET].
15. Repeat the Step(3) to Step(14) unit vectors becomes within Spec.

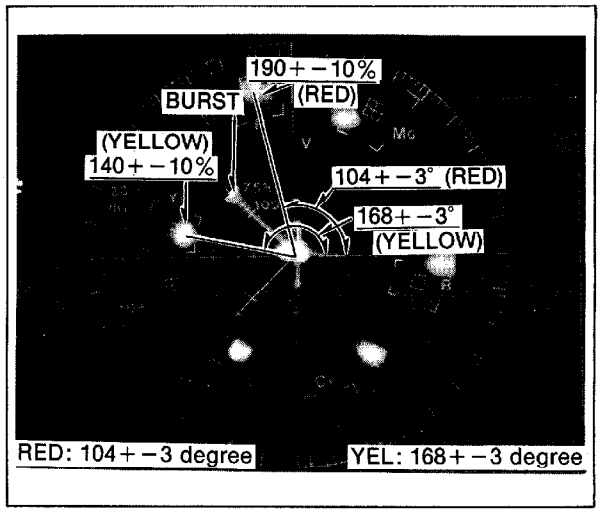


Fig. C21

16. OUTDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	RAM	EEPROM		
09	BB (R-Y) AB (B-Y)	—	WHITE CHART	VECTOR-SCOPE OR OSCILLO-SCOPE
02	—	21 (R-Y)		
12	—	21 (B-Y)		
SPEC.			TP	
VECTOR COMES CENTRE OR WAVEFORM IS MINIMIZED			VIDEO OUT	
CONDITION				
TEMPERATURE CONVERSION FILTER: VFK0713 (C12) VFK0716 (C2) IRIS: ALC				

Purpose:
Set standard white level for each colour temperature.

Symptom of Misadjustment:
White becomes bluish or reddish.

<Preparation>
1. Connect the Video Out to Vectorscope.
2. Cover the lens with colour temperature conversion filter VFK0713 and VFK0716 to imitate the Outdoor lighting.
3. Aim the camera at white chart, and push [SHIFT 1 + 8] keys for white set.
(Please confirm, vectors came to center)

<Read Out the data for R-Y>

Push the following keys in order.

4. * [CMD], [0], [9].
* [ADR], [B], [B].
* [SET].
(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for R-Y)

<Data Writing for R-Y>

Push the following keys in order.

5. * [CMD], [0], [2]. (Does not change the data)
* [ADR], [2], [1].
* [SET].

<Read Out the data for B-Y>
Push the following keys in order.

6. * [CMD], [0], [9].
* [ADR], [A], [B].
* [SET].

(When the pushed [SET] key, data LED of EVR indicate the data of white balance for B-Y)

<Data Writing for B-Y>
Push the following keys in order.

7. * [CMD], [1], [2]. (Does not change the data)
* [ADR], [2], [1].
* [SET].

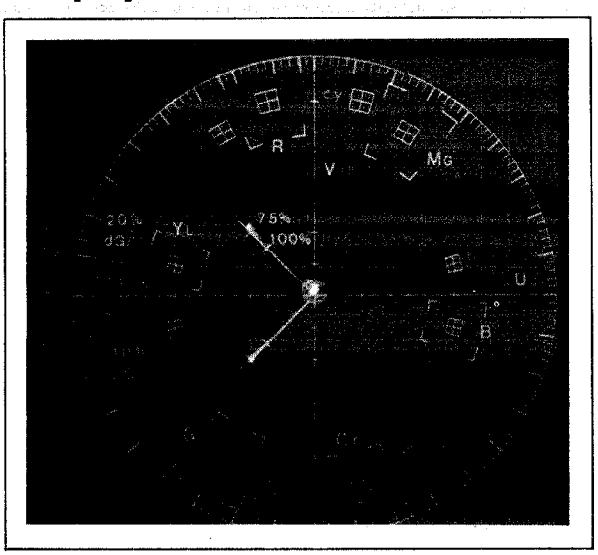


Fig. C22

17. COLOUR PHASE AND GAIN ADJUSTMENT (OUTDOOR)

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
08	95 (R-Y G) 97 (R-Y P) 94 (B-Y G) 96 (B-Y P)	—	COLOUR BAR CHART	VECTOR SCOPE
02	—	01 (R-Y G) 11 (R-Y P)		
12	—	01 (B-Y G) 11 (B-YP)		
SPEC.			TP	
RED: 104 + −3 degree/ PHASE, 190% + −10% GAIN (Red/BURST) YEL: 168 + −3 degree/ PHASE, 140% + −10% GAIN Yellow/BURST)			VIDEO OUT	

Note:
Be sure to carry out the Outdoor white balance Adjustment before doing this Adjustment.

<Preparation>
1. Connect the Video output to vectorscope.
2. Aim the camera at colour bar chart and cover the lens with colour temperature conversion filter VFK0713 (C12) and VFK0716 (C2) to imitate the out door lighting.

<R-Y Gain>
(Step3 to 5 are R-Y Gain Adjustment)

Push the following keys in order.

3. * [CMD], [0], [8].
* [ADR], [9], [5].
4. * Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C22.

<Data Writing for R-Y Gain>
Push the following keys in order.

5. * [CMD], [0], [2]. (Do not change the data)
* [ADR], [0], [1].
* [SET].

<R-Y PHASE>
(Step6 to 8 are R-Y Phase Adjustment)

Push the following keys in order.

6. * [CMD], [0], [8].
* [ADR], [9], [7].
7. * Push the [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C23.

<Data Writing for R-Y Phase>

Push the following keys in order.

8. * [CMD], [0], [2]. (Do not change the data)
* [ADR], [1], [1].
* [SET].

<B-Y Gain>
(Step9 to 11 are B-Y Gain Adjustment)

Push the following keys in order.

9. * [CMD], [0], [8].
   * [ADR], [9], [4].
10. * Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C23.

<Data Writing for B-Y Gain>

Push the following keys in order.

11. * [CMD], [1], [2]. (Do not change the data)
    * [ADR], [0], [1].
    * [SET].

<B-Y PHASE>
(Step12 to 14 are B-Y Phase Adjustment)

Push the following keys in order.

12. * [CMD], [0], [8].
    * [ADR], [9], [6].
13. * Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C23.

<Data Writing for B-Y Phase>

Push the following keys in order.

14. * [CMD], [1], [2]. (Do not change the data)
    * [ADR], [1], [1].
    * [SET]
15. Repeat the Step(3) to Step(14) until vectors becomes within Spec. as shown in Fig.C23.

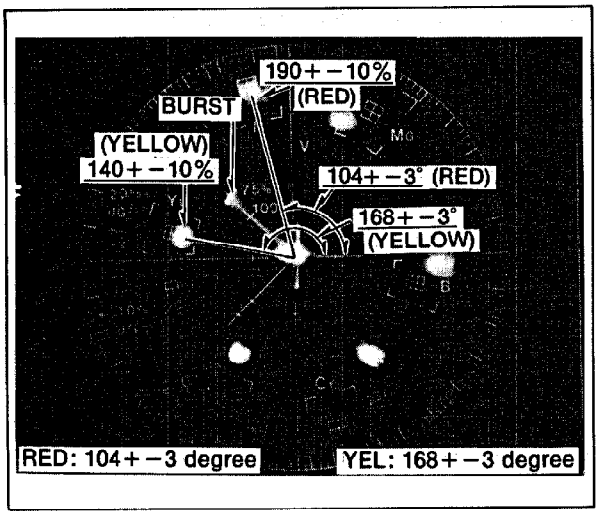


Fig. C23

18. DATA WRITING FOR COLOUR REPRODUCTION AND WHITE BALANCE

Purpose:
Each adjustment voltage is recorded in EEPROM as digital data. For colour reproduction adjustments such as white balance, phase and gain adjustments, the adjustments have only been performed for indoor lighting (3200 degree kelvin) and outdoor lighting (5600 degree kelvin). The EEPROM requires the data for other lighting conditions such as 3600 degree kelvin, 4500 degree kelvin and 6000 degree kelvin. In order to supply the rest of the data the following calculation has to be done and the results entered in the proper address of EEPROM.

Misentering:
White balance and colour reproduction in lighting conditions between indoor and outdoor are poor.

Note 1:
VFK0701ROM32 (New ROM) for EVR must be installed in EVR fixture.
Mode selector should be "B" side.

1. Push [SHIFT 2 + 3] key simultaneously.
(All formulas in Fig. C24, are performed and results stored in EEPROM automatically.)

Note 2:
How to calculate and enter the data manually.
You can do calculation and entering the data to EEPROM manually as follows:

(For example)
ITEM : R-Y GC 36

FORMULA : ADR05+0.944×(ADR01−ADR05)

EEPROM ADDRESS : 03

1) Read Out the data.
ADR 05 : Set the command to "04".
Set the address to "05".
Push the "SET" button.
The number which is indicated in "DATA" LED is a data of ADR05 (Address "05") for example, if indicated data is "56", substitute "56" to ADR05.
(This is hexadecimal number)
The same as above, read out the data from address "01".
For example if data which is read out is ADR01 = "6C", ADR05="56" above formula becomes;
R-Y GC 36 = 56+0.944×(6C−56).

2) Convert the hexadecimal data into decimal number using conversion table. (Shown in Fig. C18) For example, "56" in hexadecimal is "86" in decimal from intersection of 5 and 6.
Substitute it into the formula.
Therefore,
R-Y GC 36 = 86+0.944×(108−86)
= 86+0.944×(22)
= 107

3) Convert the result "107" to hexadecimal using conversion table (Fig. C18).
"107" decimal is "6b" in hexadecimal.
Write the "6b" into EEPROM address "03".
* Set the command to [02].
* Set the address to [03].
* Set the data [6b].
* Push the [SET] key.

Calculation for Colour Reproduction

NBR	ITEM	EEPROM ADDRESS	CMD	RESULT OF CALCULATION	FORMULA
(1)	R–Y GC 36	03 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "05" +0.944×(ADR "01" – ADR "05")
(2)	R–Y GC 45	02 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "05" +1.000×(ADR "01" – ADR "05")
(3)	R–Y GC 28	06 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "05" +0.412×(ADR "01" – ADR "05")
(4)	R–Y GC 60	00 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "05" +1.000×(ADR "01" – ADR "05")
(5)	R–Y GC 33	04 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "05"
(6)	R–Y MAT 28	16 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "15"
(7)	R–Y MAT 36	13 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "15" – 0.091×(ADR "11" – ADR "15")
(8)	R–Y MAT 45	12 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "15" + 1.000×(ADR "11" – ADR "15")
(9)	R–Y MAT 60	10 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "15" +1.000×(ADR "11" – ADR "15")
(10)	R–Y MAT 33	14 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "15"
(11)	B–Y GC 28	06 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "05" +0.333×(ADR "01" – ADR "05")
(12)	B–Y GC 36	03 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "05" +0.889×(ADR "01" – ADR "05")
(13)	B–Y GC 45	02 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "05" +1.000×(ADR "01" – ADR "05")
(14)	B–Y GC 60	00 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "05" +1.000×(ADR "01" – ADR "05")
(15)	B–Y GC 33	04 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "05"
(16)	B–Y MAT 28	16 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "15"
(17)	B–Y MAT 36	13 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "15"
(18)	B–Y MAT 45	12 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "15" +1.000×(ADR "11" – ADR "15")
(19)	B–Y MAT 60	10 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "15" +1.000×(ADR "11" – ADR "15")
(20)	B–Y MAT 33	14 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "15"
(21)	R–Y WB 28	26 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" – 0.333 ×(ADR "21" – ADR "25")
(22)	R–Y WB 33	24 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.238×(ADR "21" – ADR "25")
(23)	R–Y WB36	23 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.524×(ADR "21" – ADR "25")
(24)	R–Y WB 45	22 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.143×(ADR "21" – ADR "25")
(25)	R–Y WB 49	29 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.000×(ADR "21" – ADR "25")
(26)	R–Y WB 60	20 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.214×(ADR "21" – ADR "25")
(27)	R–Y WB L–LIM	27 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.214×(ADR "21" – ADR "25")
(28)	R–Y WB H–LIM	28 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.000×(ADR "21" – ADR "25")
(29)	B–Y WB 28	26 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" – 0.154×(ADR "21" – ADR "25")
(30)	B–Y WB 33	24 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.135×(ADR "21" – ADR "25")
(31)	B–Y WB 36	23 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.346×(ADR "21" – ADR "25")
(32)	B–Y WB 45	22 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.615×(ADR "21" – ADR "25")
(33)	B–Y WB 49	29 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.000×(ADR "21" – ADR "25")
(34)	B–Y WB 60	20 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.288×(ADR "21" – ADR "25")
(35)	B–Y WB L–LIM	27 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.288×(ADR "21" – ADR "25")
(36)	B–Y WB H–LIM	28 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.000×(ADR "21" – ADR "25")

Calculation for Auto White Balance

NBR	ITEM	EEPROM ADDRESS	CMD	RESULT OF CALCULATION	FORMULA
(1)	BH 28	46 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" – 1.038×(ADR "21" – ADR "25")
(2)	BH 30	45 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" – 1.038×(ADR "21" – ADR "25")
(3)	BH 36	43 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" – 0.288×(ADR "21" – ADR "25")
(4)	BH 45	42 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.019×(ADR "21" – ADR "25")
(5)	BH 51	41 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.769×(ADR "21" – ADR "25")
(6)	BH 60	40 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.731×(ADR "21" – ADR "25")
(7)	BH TR	48 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" – 0.288×(ADR "21" – ADR "25")
(8)	BH SKY	47 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" + 1.789×(ADR "21" – ADR "25")
(9)	Baxisth	4A (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.769×(ADR "21" – ADR "25")
(10)	BL 28	36 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.481×(ADR "21" – ADR "25")
(11)	BL 30	35 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.481×(ADR "21" – ADR "25")
(12)	BL 36	33 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.615×(ADR "21" – ADR "25")
(13)	BL 45	32 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.769×(ADR "21" – ADR "25")
(14)	BL 51	31 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.731×(ADR "21" – ADR "25")
(15)	BL 60	30 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +1.789×(ADR "21" – ADR "25")
(16)	BL TR	38 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "25" +0.769×(ADR "21" – ADR "25")
(17)	BL SK	37 (HIGH DIGIT)	READ : 14 WRITE: 12		ADR "00"
(18)	RH 28	46 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" – 1.949×(ADR "21" – ADR "25")
(19)	RH 30	45 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" – 1.949×(ADR "21" – ADR "25")
(20)	RH 36	43 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.167×(ADR "21" – ADR "25")
(21)	RH 45	42 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.810×(ADR "21" – ADR "25")
(22)	RH 51	41 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.429×(ADR "21" – ADR "25")
(23)	RH 60	40 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.929×(ADR "21" – ADR "25")
(24)	RH TR	48 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.381×(ADR "21" – ADR "25")
(25)	RH SK	47 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.929×(ADR "21" – ADR "25")
(26)	Rxisth	4A (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.810×(ADR "21" – ADR "25")
(27)	RL 28	36 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" – 1.949×(ADR "21" – ADR "25")
(28)	RL 30	35 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.167×(ADR "21" – ADR "25")
(29)	RL 36	33 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +0.810×(ADR "21" – ADR "25")
(30)	RL 45	32 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.381×(ADR "21" – ADR "25")
(31)	RL 51	31 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.730×(ADR "21" – ADR "25")
(32)	RL 60	30 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.810×(ADR "21" – ADR "25")
(33)	RL TR	38 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.881×(ADR "21" – ADR "25")
(34)	RL SK	37 (LOW DIGIT)	READ : 04 WRITE: 02		ADR "25" +1.881×(ADR "21" – ADR "25")

19. ADDITIONAL FOR HOW TO USE E.V.R.

E.V.R. FIXTURE

Camera Process section uses a memory IC called a E.E.P.R.O.M.(Electrical Erasable Programmable Read Only Memory) that replaces the variable resistor in conventional camera process. In the conventional camera process, each adjustment point was adjusted by turning variable resistors as shown in Fig.C25. In the Movie Camera adjustment voltage is recorded in the EEPROM as 8 bit digital data. The EEPROM supplies the recorded adjustment voltage to the adjustment point as shown in Fig.C26.

The data in the EEPROM can be changed electrically. The E.V.R.(Electric Variable Resistor) has been designed to change the 8 bit data of EEPROM in process circuit. The E.V.R. can also communicate directly with the RAM of the micro processor to change each control voltage. In normal operation the EEPROM would send the voltage data to RAM where the digital data is used to changed the adjustment values in the various circuits. Using the E.V.R. you can change the data stored in the EEPROM easily there by adjusting the camera process section. And the E.V.R. can also send the data to the RAM directly to confirm the adjustment.

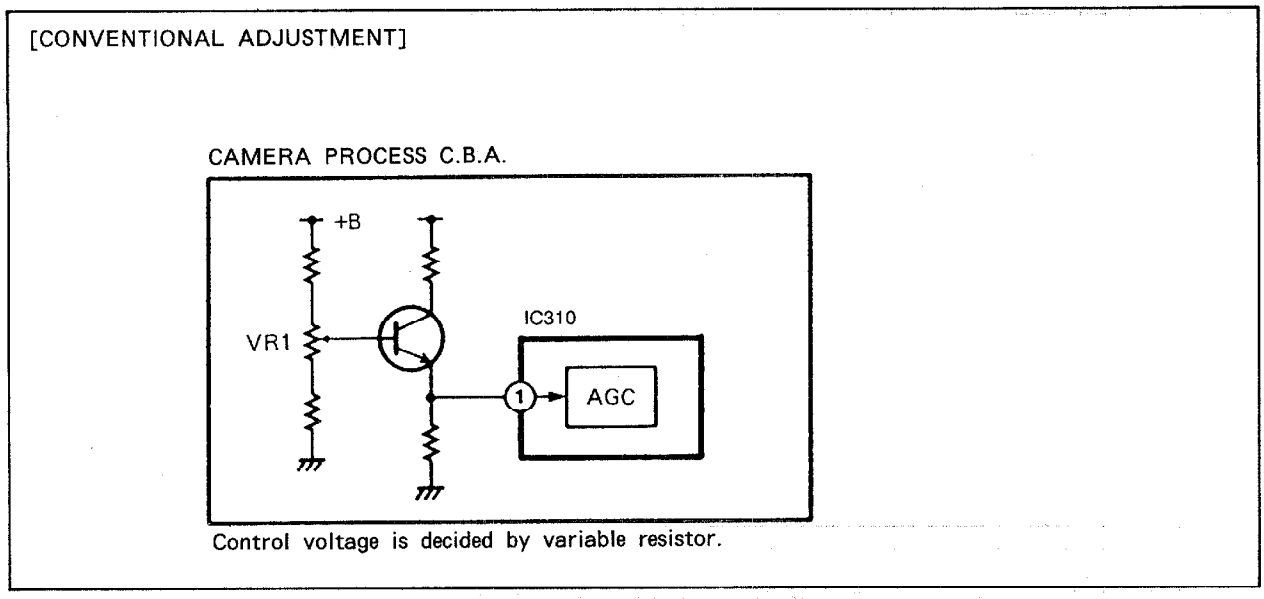


Fig. C25

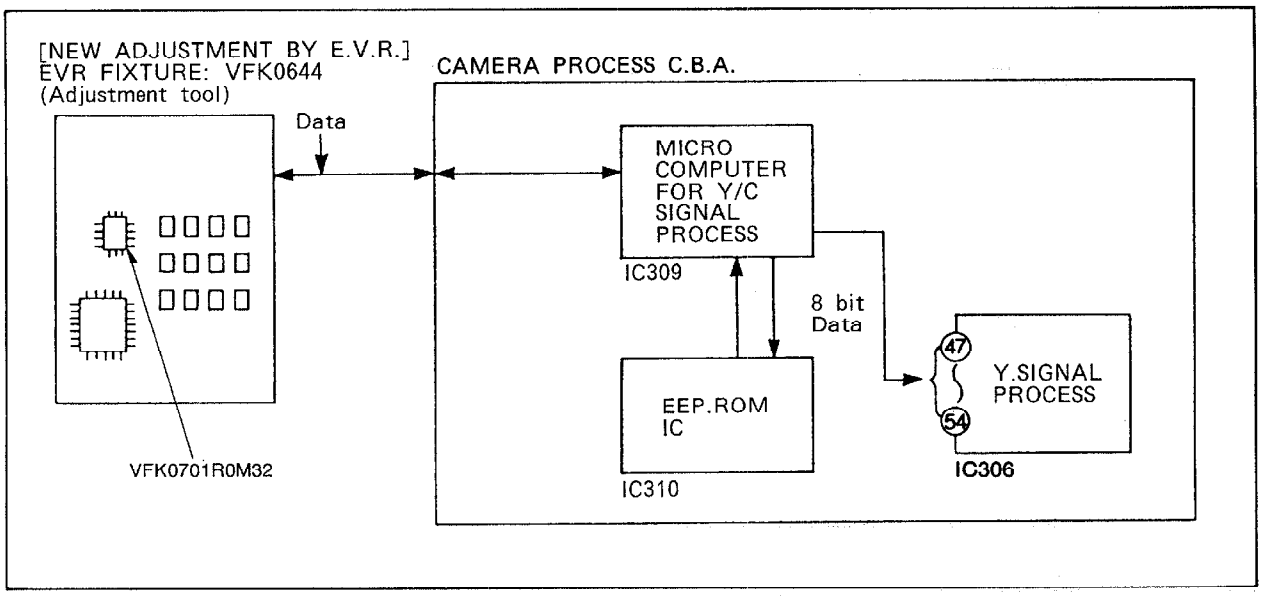
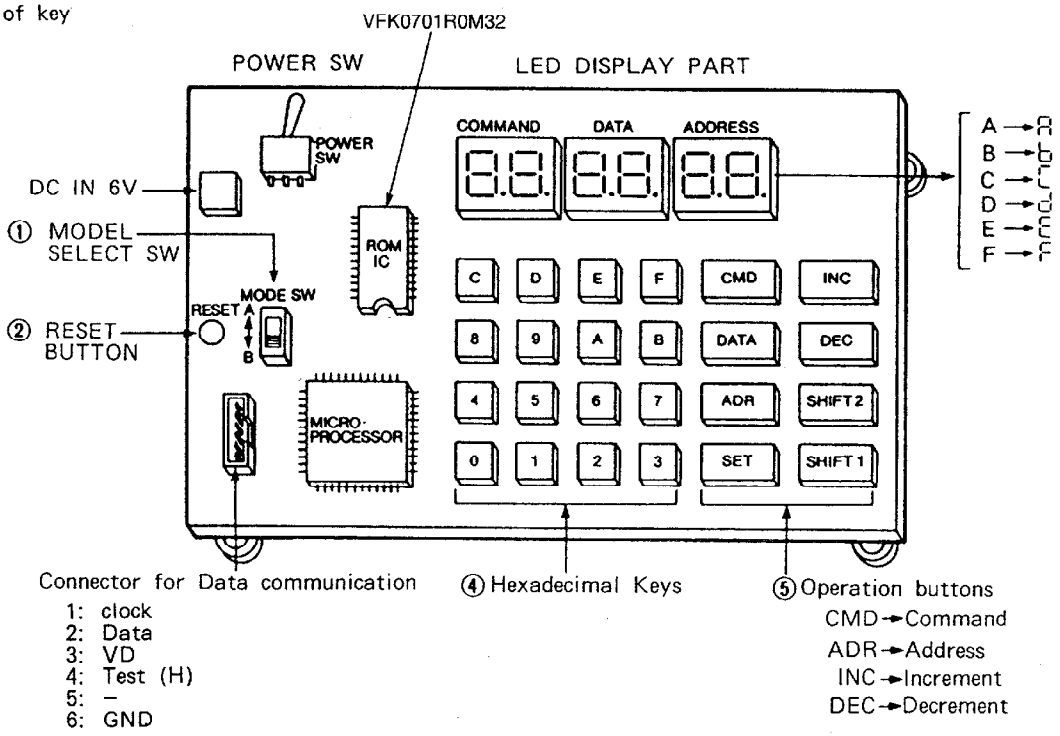


Fig. C26

Name of key



NO.	NAME	DESCRIPTION
①	MODE SW	MODEL selection switch. In case of this model turn it to B side.
②	RESET BUTTON	After Power is on, if operation is not stable, push this SW.
③	ROM IC	ROM IC of which Programing (to operate E.V.R) is memorized in. In the future, to cope with new camcorder servicing, this ROM IC could be replaced to new version.
④	HEXADECIMAL KEYS	Key buttons of 16 pieces (from "O" to "F"). These are used when "COMMAND", "DATA" or "ADDRESS" is set.
⑤	OPERATION BUTTONS	The buttons to operate writing, reading or setting the data.
	CMD: Command button	This is used to decide the which mode (command) between E.V.R and camcorder (for example, data writing or reading) to perform.
	DATA: Data button	For changing Data.
	ADR: Address button	To appoint the EEPROM address or RAM address.
	SET: Set button	To perform the appointed command (for example reading or writing).
	INC: Incliment DEC: Decliment	Increase or decrease the data one by one (+1, −1)
	SHIFT 1 button	To carry out macro operation (while pushing with hexadecimal keys) SHIFT 1 button is used. (Macro operations will be described later)
	SHIFT 2 button	To carry out macro operation(while pushing with hexadecimal keys) SHIFT 2 button is used (Macro operations will be described later.)

Fig. C27

(Before Adjusting How to use the E.V.R. Fixture)

1) How to read out the data which is being stored in EEPROM.
Connect the E.V.R. Fixture as shown in Fig.C3.

Result:
Adjustment value of AGC has been set for "6A". It is advisable to read out the data like this and make a note of it before writing the new data so that if a error should occur you can rewrite original data.

Item		Proceduring Order	Buttons to be Pushed	LED Indication
For Example, Reading out the data of AGC Adjustment comunication from camcorder to E.V.R. EEPROM→ E.V.R.	1	Set the Command mode to "14", "14" is read out command. (Refer to command description)	[CMD] [1] [4]	LED lights up 14/80 00 Command setting
	2	Set the Address of EEPROM	[ADR] [6] [A]	14 80 6A Address setting of EEPROM LED lights up
	3	Read out the data	[SET] Push this for 2 seconds	14 09 6A data for AGC for example LED lights up

Fig. C28

2) Writing the New Data.

(1) Search and Write Procedure
(For example : AGC Adjustment).

Confirmation:
Confirm whether data is written correctly or not.

Procedure:
1. Set the Command to [04].
2. Set the Address to [41].
3. Push the [SET] button.
4. The number which is indicated on DATA LED is a data which has been written.

Item		Proceduring Order	Buttons to be Pushed	LED Indication
For Example, writing the AGC adjustment data. E.V.R. → EEPROM	1	Set the command to "18".	[CMD] [1] [8]	Command for search mode.
	2	Set the Address of RAM to "BC" E.V.R.→ RAM (communication from E.V.R. to RAM)	[ADR] [B] [C]	LED lights up. 18/80 bC
	3	Adjustment Push "DEC" or "INC" button so that AGC at PP302-20 becomes 240	Search with [INC] or [DEC]	18 9 1 bC LED lights up
	4	Change the command to "12"	[CMD] [1] [2]	LED lights up 12/9 1 bC Command for Direct Writing

Fig. C29

Item		Procedurlng Order	Buttons to be Pushed	LED Indication
	5	Set the address of EEPROM to "6A"	ADR 6 A	address of EEPROM 12 9 16C LED lights up
	6	Do not change the data after adjustment	DATA 9 1	12 9 1,6C LED lights up
	7	Write the data	SET Push this for 2sec.	LED disappear 12 9 16C

Fig. C30

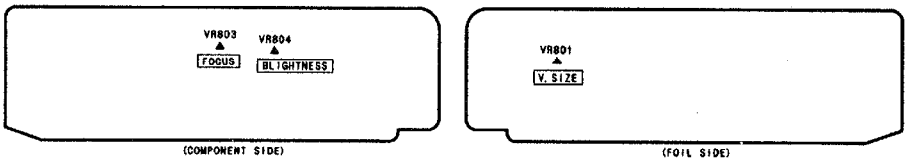
3) Direct Writing Procedure

Item		Procedurlng Order	Buttons to be Pushed	LED Indication
For Example, writing the AGC adjustment data	1 2 3	**Searching the best Point.** **same as (1)**	**same as (2)**	**same as (2)**
	4	Change the command to "12"	CMD 1 2	LED lights up 12/80 00 Command for Direct writing
	5	Set the address of EEPROM to "6A"	ADR 6 A	address of EEPROM 12 00 6A LED lights up
	6	Set the data of best point "91"	DATA 9 1	12 9 1,6A LED lights up
	7	**Write the data**	SET **Push this for 2sec.**	LED disappear. 12 9 16A

Fig. C31

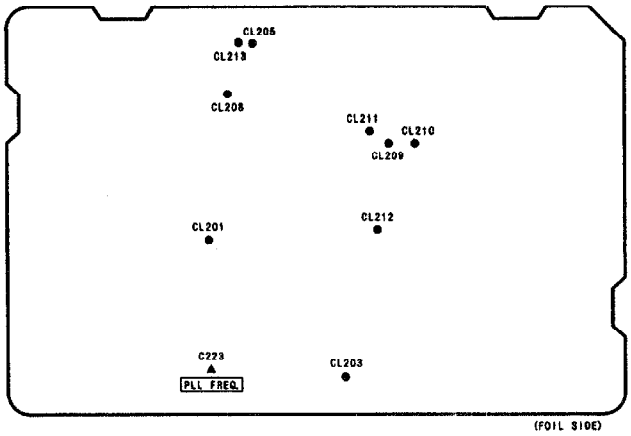
LOCATION OF TEST POINTS AND CONTROLS (1)

E.V.F. C.B.A.

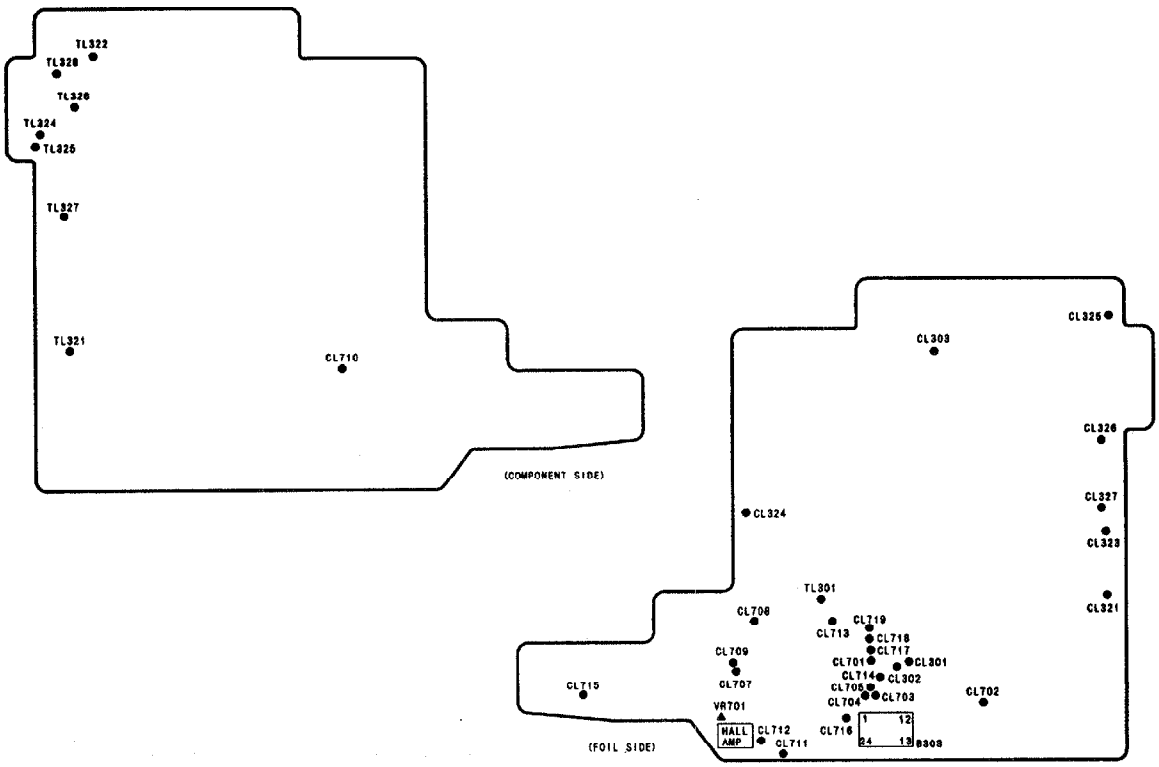


LOCATION OF TEST POINTS AND CONTROLS (2)

CCD DRIVE C.B.A.



PROCESS & AF C.B.A.



Memo

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